Agricultural Resources of Pennsylvania, c 1700-1960

North and West Branch Susquehanna Diversified Agriculture, 1840-1960

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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."[1] 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.[2]

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 20th 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.

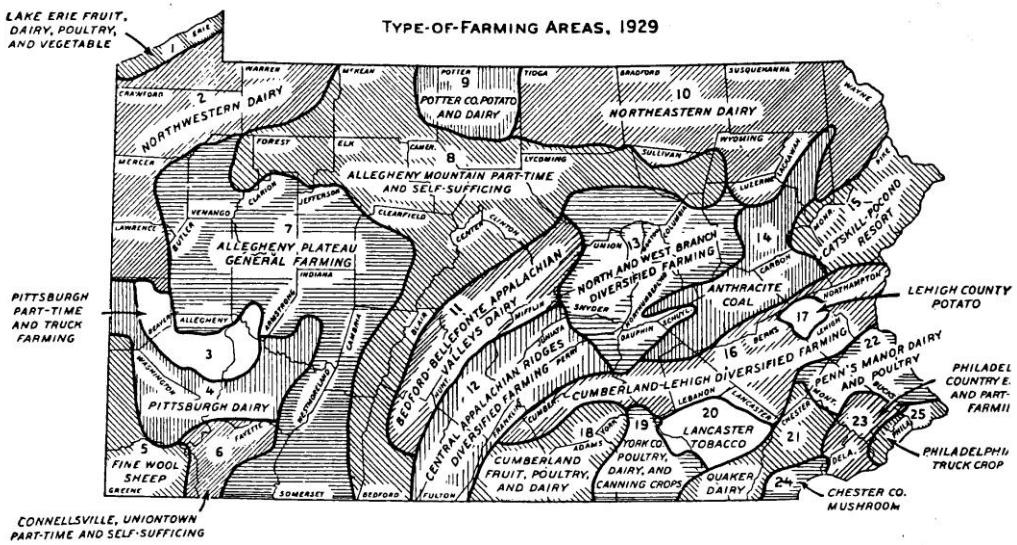
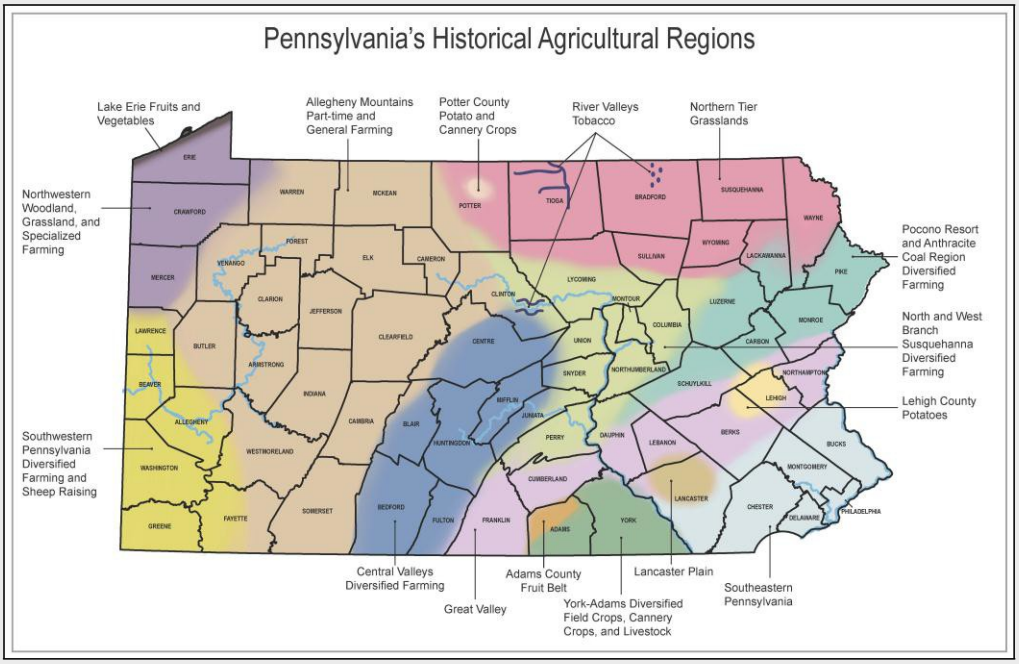


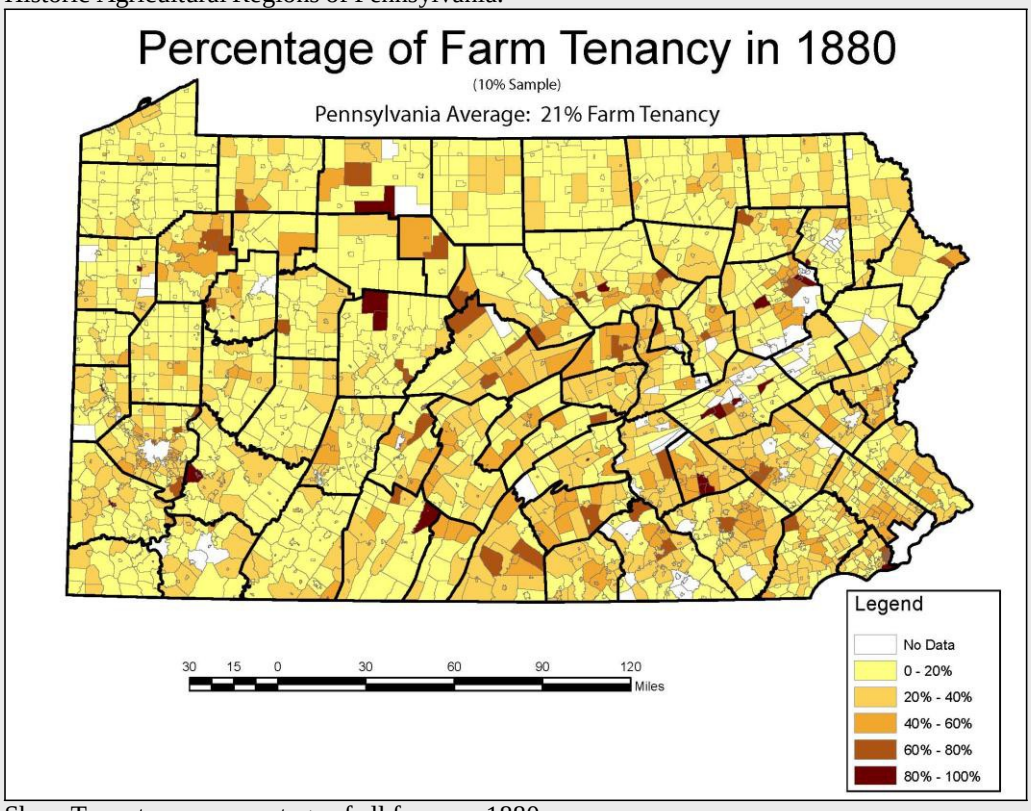
FIG. 35.—TYPE OF FARMING AREAS, 1929

Topography, soils, climate, and marketing opportunities divide Pennsylvania into 25 more or less distinct "type of farming" areas.

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

This area encompasses agricultural places that a) are roughly centered on the confluence of the Susquehanna's North and West Branches, and areas that border the river or its nearby tributaries, b) are characterized by glaciated terrain, mostly within the Susquehanna Lowlands Section of the ridge-and-valley physiographic province, c) generally possess ultisol soils underlain by sandstone or shale (i.e. this excludes the limestone valleys), d) and have historically been shaped by transportation corridors along the rivers. This definition excludes anthracite coal and mountain townships. The map above gives the region's boundaries.

In Northumberland County, therefore, this region would include most townships *except* the coal areas and mountain areas of Little Mahanoy, Zerbe, West and East Cameron, Shamokin, and Kulpmont. In Montour County, it includes townships of Anthony, Derry, and Liberty. (Limestone Township, as its name suggests, sits on a small area of limestone soils and therefore should be included in the Central Valleys area.) It encompasses most of Columbia County, which is bisected by the North Branch, *except* for the mining and hill townships such as Beaver, Main, Conyngham, Montour, and parts of Catawissa. Jackson, Sugarloaf, Pine, and Fairmount townships in the county's north are mostly mountainous. In Snyder County, the border areas in townships that line the river's west bank are included, namely Chapman, Union, Penn, and Monroe. In Lycoming, townships bordering the North Branch, including: Jersey Shore, Nippenose, Susquehanna, Lycoming, Anthony, Old Lycoming, Woodward, Piatt, Porter, Mifflin, Watson, Bastress, Limestone, Armstrong, Clinton, Jordan, Wolf, Penn, Fairfield, Upper Fairfield, Loyalsock, Mill Creek, Shrewsbury, Muncy, Muncy Creek, Fairfield, Franklin, Jordan, and Clinton. In Dauphin County, the townships north of Blue Mountain (Reed, Halifax, Wayne, Jackson, Jefferson, Rush, Williams, Wiconisco, Washington, Upper Paxton, Mifflin, and Lykens); all of Perry County. In some sections of this region the boundary with the Central Valleys region is less well defined. Limestone Township in Montour County and the Buffalo Valley in Union County, central Snyder County, and eastern Juniata County were included in the original Central [Limestone] Valleys region; in some cases, there may be overlap with the North and West Branch Susquehanna Region.

Climate, Soils and Topography

This area averages about 50 degrees Fahrenheit mean annual temperature, with 40 inches of precipitation, and a high number of cloudy days. The average number of frost-free days is about 165 days. Soils in this region are generally ultisols in the DeKalb series, of variable quality. This region is part of the Ridge and Valley province; it is differentiated from the Central Valleys region in that it lies within the glaciated area of the state, which means that the surface was scoured and so soils are more variable and generally lower in quality than the limestone areas. Topographically, while the region does have the characteristic ridges and valleys, it also features a patchwork of low-lying, smaller hills. Agriculture has historically taken place in the interstices between these hills and the ridges, and along the Susquehanna River Valley itself, whose North and West Branches run through the region.

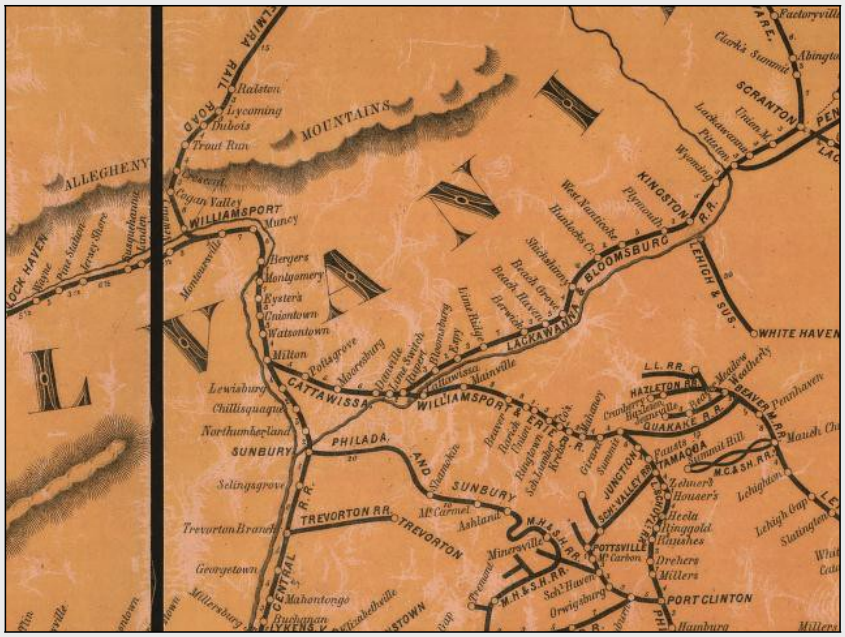
Historic Farming Systems

In the North and West Branch area, the agricultural and landscape history falls into four periods. Beginning about 1790, effective settlement took place, and until about 1840, agricultural production reached two disparate destinations: staples went to family and neighbors on the one hand, and valuable, non-bulky goods to long-distance markets on the other. At this point, clear agricultural regions in Pennsylvania had not yet crystallized. Please see the separate narrative on "Agriculture in the Settlement Period to About 1840" for details on this period. The North and West Branch Historic Agricultural Region emerged as a distinct region around 1840, and thereafter its agricultural, cultural, and landscape development fell into three periods. From about 1840 to 1860, transport development made it easier to export bulky goods, and social trends such as temperance prompted a shift away from growing grain for whiskey, and towards items such as corn, wheat, pork, and butter. Relative to other parts of the state, farming was more mechanized in this period. From 1860 to about 1940, the region's agriculture was shaped largely by population growth in the nearby industrial regions. Farming households developed a diversified mix oriented to these local markets. It featured corn, hogs, poultry, potatoes, buckwheat, and other products, often within a pronounced Pennsylvania German cultural context. As before, farms were relatively highly mechanized. From 1940 to 1960, the chief changes affecting agriculture were technological: the switch to combustion power from horses led to a re-structuring of crop patterns (since horse feed was no longer needed), and electrification eliminated the need for ice houses, spring houses, and even summer kitchens. Also, economic and cultural

consolidation at the national and global levels homogenized rural society and with it the rural landscape.

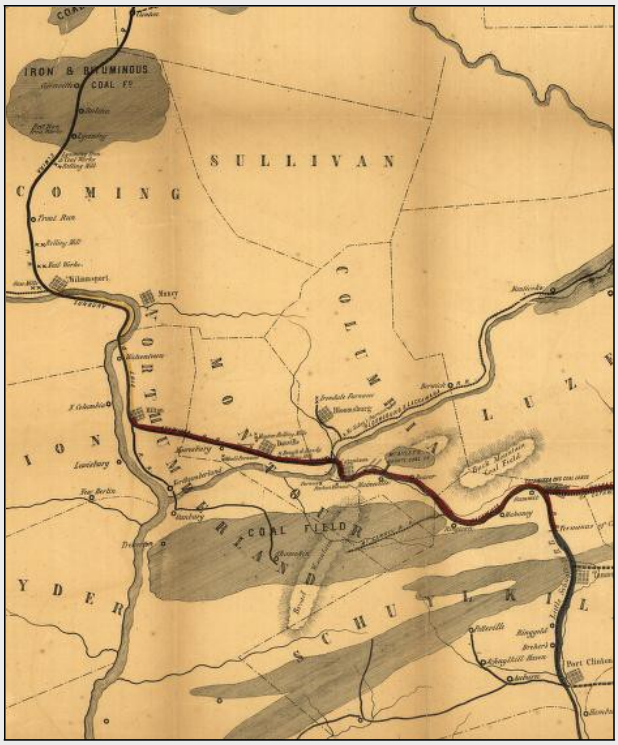
Diversified Production on Highly Mechanized Farms, c. 1840-1860

The key development in this period was that the region became more effectively connected to its distant markets by the state's emerging canal and rail system; the Main Line Canal reached into the region's heart by 1830, connecting Duncannon to Northumberland. The area was well laced by major railroads by 1860.[1] At the same time, the iron industry and related manufacturing emerged in the region, particularly in



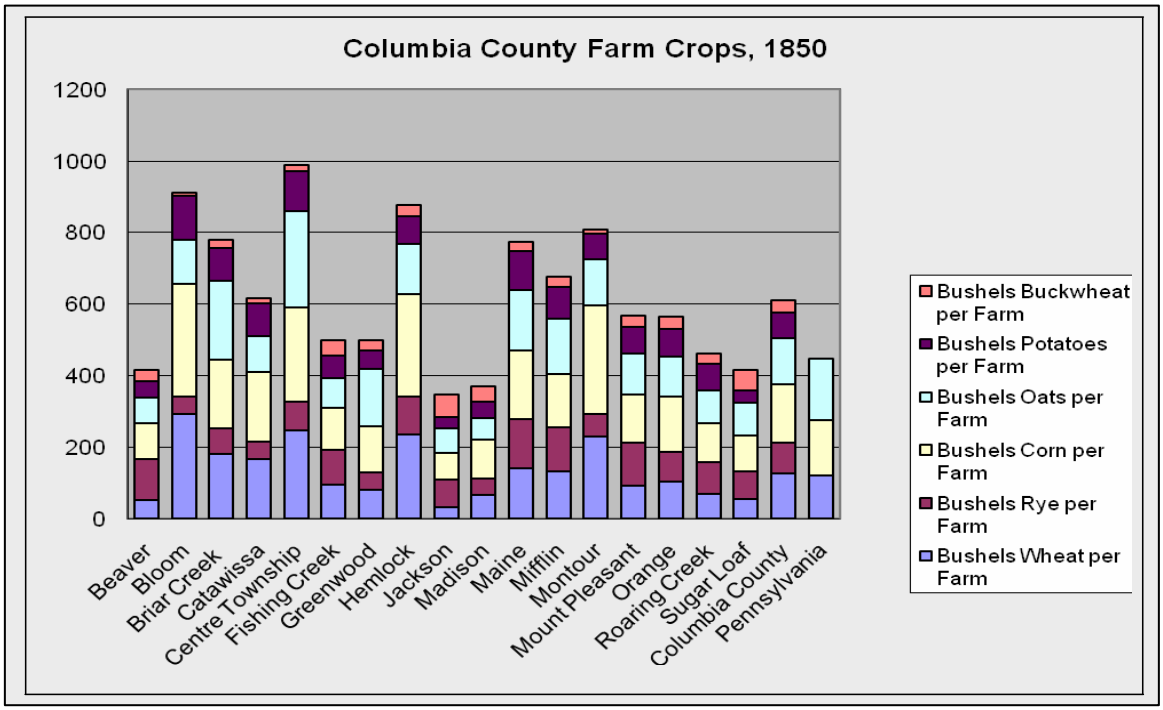
Section of Barrington's New Railroad Map (1860) showing rail stops in the heart of the North/West Branch region. Library of Congress, American Memory web site, digital ID g3821p rr002950 http://hdl.loc.gov/loc.gmd/g3821p.rr002950.

Union County, Danville, and Milton. While these industries did not yet employ huge numbers, they did create modest local markets and they made it possible for farms to mechanize more than in other parts of the state. Hence the agriculture that emerged in this period features a highly mechanized, diversified production, as before mainly for local exchange and distant markets, but with some changes to the product mix.

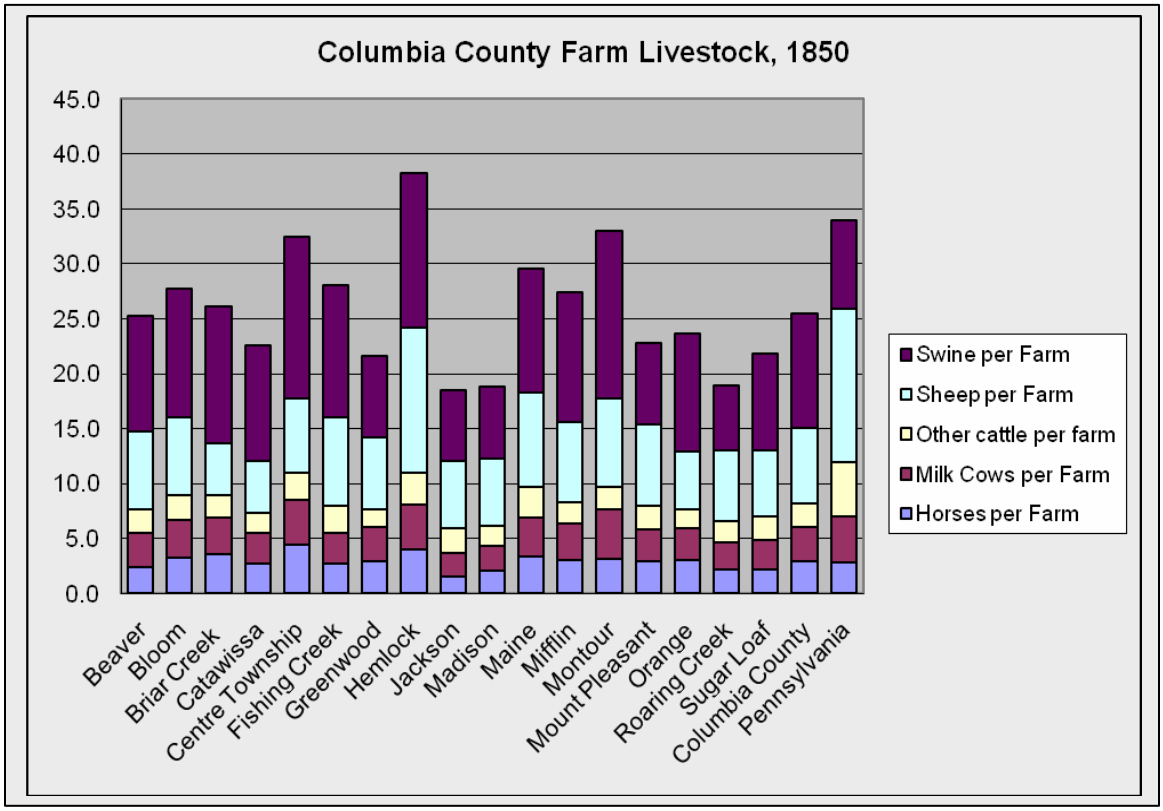


Catawissa and Williamsport Rail Road, 1856. Library of Congress. Digital ID g3821p rr003610 http://hdl.loc.gov/loc.gmd/g3821p.rr003610

Products, c. 1840-1860



The product mix changed only subtly from the settlement period. Probably the biggest change was that whiskey was no longer important, both because transport innovations made it less attractive, and because the national temperance movement resulted in a



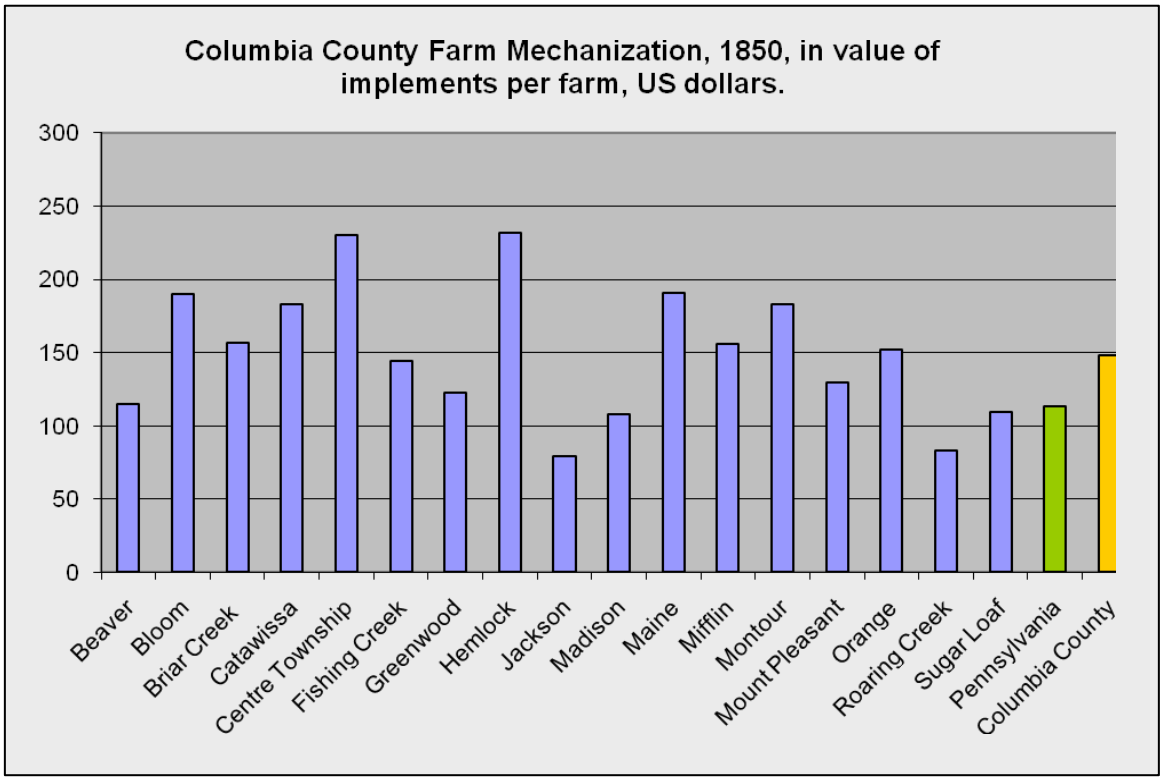
decline in demand. Therefore, wheat went to other destinations and rye acreage declined. Otherwise, the pattern established after settlement persisted. Agriculture was highly diversified here, characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milch cows, sheep, and beef animals, and higher than average (though still not markedly so) numbers of swine. Production continued to go to multiple uses: on-farm consumption by family and livestock; barter exchange; and cash exchange for both nearby and distant markets.

Labor and Land Tenure, c. 1840-1860

The most significant development of this period is the marked mechanization. By this point, most townships included in the region showed a much higher than average (for Pennsylvania) level in the value of farm implements. This is probably accounted for by the presence of nearby ironworks. Ancillary industries also developed because of the ironworks; thus, for example, there was a farm machinery factory in Hartley Township, Union County, in the 1830s, and the Mifflinburg buggy works got started in the 19th century as well.[2] Most work was still done with human power, but it was aided by a variety of machines, both stationary and horse-drawn. Thus labor patterns were qualitatively different than in areas (such as the Northern Tier) where mechanization had not advanced as far.

Though many farm tasks were mechanized, family and neighborhood people still supplied most farm labor. As before, the gender division of labor was clear, yet flexible. Neighbors and kin accomplished many tasks collectively. And, families still were engaged in a complex web of exchanges that included labor, services, cash, barter, and the like.

Brick house with summer kitchen, Union Township, Snyder County, c. 1860-75. Site 109-UN-003.



Buildings and Landscapes, c 1840-1860

Houses, c. 1840-1860

This was the classic era of the "four-over-four." Here the term "four-over-four" is being used to denote an exterior façade with symmetrically arranged openings, literally four over four.[3] Some fine examples are found in the region.

Four-over-four house with two doors, Middleburg Township, Snyder County, c. 1840-60. Site 109-MI-001.

Another form had five exterior bays. Usually, this type would have a center door, but like the four-over-four, it would be two rooms deep.

One room deep four-over-four house, Greenwood Township, Columbia County, c. 1850. Site 037-GR-005.

The typical North/West Branch farmhouses of this period share basic architectural characteristics, whether they have three, four, or five (or more) bays. They usually have two windows in the gable ends, even if they are not two rooms deep. They have a square-ish footprint. Five-bay houses usually had a central doorway, while three-bay houses still were normally two rooms deep and commonly had either a central door or a side door. Four-bay houses might have a single off-center door, or two, central doors. Scholars such as Henry Glassie and Joseph Glass have labeled the four-bay houses the "Pennsylvania farmhouse." Regardless of how many bays they had, these houses had interior gable end chimneys, but often no fireplaces, having been erected after stoves became the main heating technology. Many were banked, giving a basement work and storage space, and a *vorhof*, or work yard. Materials and trim varied; the latter usually in a muted expression of whatever style trend prevailed at the time. Sometimes a flat date stone over the doorway or in the gable end bore the names of the husband and wife. Interior trim followed current styles, but we might find echoes of the past in slightly heavier-than-usual moulding or in traces of a vivid paint color. Interior plans varied, just as their colonial era predecessors had. Some had the classic "Georgian" central hall plan, but many did not. Henry Glassie has shown that some retained a three-room configuration behind the newly symmetrical façade, and examples elsewhere show how a three-room "Continental" Germanic-derived plan behind a three-bay, side-door exterior. Some had a four-room plan that was related to earlier versions found in the eastern hearth area.

Scholars disagree on whether to attach much ethnic significance to these 19th century forms. Henry Glassie suggested that in the so-called "Pennsylvania farmhouse" type, the Pennsylvania Germans retained familiar spaces behind "anglicized" facades. There is evidence that some people persisted with Pennsylvania German cultural practices. The *stube* is one of the most important. The hearth disappeared and the chimneys were displaced, and the three-room configuration may have been discarded; but the *stube*

Five-bay, center passage house, Lower Mahanoy Township, Northumberland County, c. 1850. Site 097-LM-002.

continued, even if in attenuated form: a "warm room," "stove room," or sometimes just "the room."[4] Indeed, fieldworkers in Snyder County heard from a local resident that his Pennsylvania German grandparents had built a three-room plan, two-door house in 1927, and they had a "warm room."

More recently, however, Barry Rauhauser examined a number of early four-bay Pennsylvania farmhouses in one York County township and found they had a wide variety of plan types behind the uniform exteriors, leading him to argue that the Pennsylvania Farmhouse was "culturally ambiguous," not associated with any particular ethnicity. Yet Rauhauser also maintained that the Pennsylvania Farmhouse contributed to a distinct regional identity through which Pennsylvania Germans "create[d] unity among their increasingly stratified and assimilated culture." This analysis closely parallels Steven Nolt's concept of "ethnicization as Americanization," in which, Nolt argues, Pennsylvania Germans used their ethnic identity as a means toward Americanization (for example by invoking freedom of religion when they opposed the public school law.)[5]

The houses in the North and West Branch, especially in the heavily Pennsylvania German regions, do seem to create a landscape that speaks simultaneously of ethnicity and

Pennsylvania localism. This pattern is especially strong if viewed in a wider context. For example, within the region, the local enclave of extant Quaker architecture in the Catawissa area, with its stonemasonry and one-room-deep buildings, contrasts with the Germanic areas further south. Within the state, the Pennsylvania German areas contrast with Northern Tier domestic architecture of the period, which characteristically had different proportions, fenestration, siting, and ornament.

Barns, c. 1840-1860

Pennsylvania Barn, Lower Mahanoy Township, Northumberland County, mid 19th century. Site 097-LM-006.

Log and frame forebay barn, Lower Mahanoy Township, Northumberland County, 1845. Site 097-
LM-005.

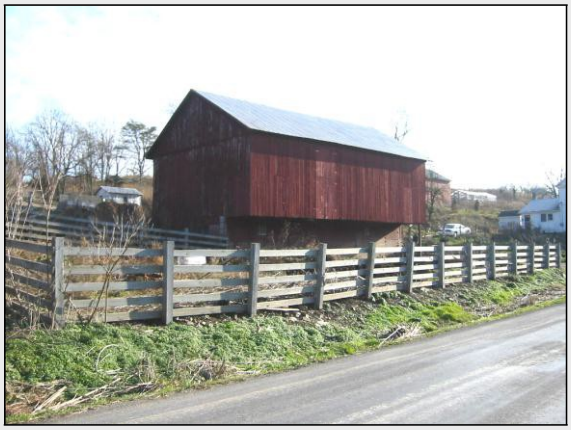
Pennsylvania forebay barn with machinery bay, Locust Township, Columbia County, late 19th century. Site 037-LO-001.

The barns dating from this period in the region most often were the classic banked Pennsylvania Barn with extended forebay. Its diagnostic features include: banked (or ramped) construction, eaves side in the bank; and the projecting overhang, also called a "forebay." This forebay could hang free; it could be supported on one or both gable ends; or sometimes it could be supported on posts. Early "Sweitzer" barns have asymmetrical gable ends, because the interior framing did not incorporate the forebay; later barns have symmetrical gable ends, because framing was adjusted to incorporate the forebay. Most Pennsylvania Barns have post and beam interior framing. Some early examples of post and beam framing show Germanic traits such as the tendency to use multiple horizontal cross beams. Later systems were simpler. The Pennsylvania Barn is associated most with Pennsylvania Germans, although people from many different social groups eventually adopted it.

Pennsylvania barn with shed roof machine shed/corncrib addition, Reed Township, Dauphin County, c. 1860 and c. 1900. Site 043-RE-001.

The Pennsylvania Barn represents an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century. The Pennsylvania Barn reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level. Also, the 19th century saw the final transition to free labor, so efficiency became more important; the vertical arrangement of the Pennsylvania Barn helped work flow through gravity.

Mechanization is reflected in the Pennsylvania Barn's accommodation for draft horses, and also in integral machinery bays. Typically a Pennsylvania Barn would have a granary, located in the forebay or sometimes on the bankside. Again, this centralization of functions contributed to efficiency. Sometimes a Pennsylvania Barn would have integral corncribs, or even cisterns.



Pennsylvania forebay barn, Chapman Township, Snyder County, 19th century. Site 109-CH-001.

Outbuildings, c. 1840-1860

George Dunkelberger, in his 1948 *Story of Snyder County*, listed the bake oven, dry house, smoke house, ground cellar, and cabbage kutsch as the "five essentials in the backyard of every rural home sixty and more years ago."[6] Survey work found no bake ovens, dry houses, or cabbage kutsches; but spring houses, smoke houses, one ice house, and "ground cellars," or root cellars, were documented.

Spring House, c. 1840-1860

Spring houses were important productive spaces in the pre-refrigeration era. Up until the Civil War period, buttermaking was a modestly important enterprise in this region, hovering right at or slightly above statewide averages. The stone springhouse depicted here may date from this period.

Spring House, Liberty Township, Montour County, mid 19th century. Site 093-LI-003.

Smoke House, c. 1840-1860

Smoke house (right), Lower Mahanoy Township, Northumberland County, late 19th century. Site 097- LM-002.

Smokehouses were mentioned in 18th century sources, but it is hard to date extant ones with certainty and the likelihood is that most postdate the settlement period. 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 combinations 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.

Ice House, c. 1840-1860

Ice house (rear), Chapman Township, Snyder County, mid to late 19th century. Site 109-CH-001.

Dunkelberger mentioned that some families had ice houses and sometimes several families would have one in common; "filling the ice-house was a community project."[7] An ice house is an insulated structure that stored ice in the days before electrical refrigeration. Ice houses were generally small, constructed of wood or sometimes stone, and with a square or rectangular footprint. Usually they were gable roofed. Sometimes they had two rooms, one for the ice itself and another for cool storage. Ice houses possess one or more of the following features: blank walls; ventilators, either on the roof-ridge in clerestory or cupola style, or simpler louvers in the gable peak (to facilitate air circulation and minimize interior temperatures); gable-end or eaves-side doors; and thick walls – if constructed of wood, they would be filled with insulating material, often sawdust. Ice houses are sometimes sited within the orbit of the farmhouse, though the location of the ice source (a pond or sometimes a creek) may also influence siting. Several ice houses were surveyed for this project; dating them is difficult, however.

Landscape Features, c. 1840-1860

By this point, property boundaries, roadways, and treelines may in some cases have assumed their modern forms and locations. The same may be true for woodlots and field systems, though these ebbed and flowed over time. Fencing would continue to be mainly worm fences, and none from this period would survive. Orchard trees established during this period would not survive to the present, though orchard sites may in rare cases persist.

Diversified Production for Local Markets, 1860-1940

The key development affecting agriculture in the region during this period was the rise of large nearby markets. Extractive and industrial cities grew quickly, creating dependable markets for foodstuffs and animal feed. At the same time, local farm people were adjusting to Western competition (especially from cheap grain and flour), and they reduced their dairying as other regions came to dominate that industry. Distant markets became much less important. Though this period covers a long time span, basic continuities justify the periodization. The *numbers* of animals on farms – especially swine and poultry – grew, but the basic pattern established in the late 19th century persisted into the twentieth century, through the Depression. The Depression years saw a small surge back to the farm, and an increase in substitution of labor and time for cash expenditure, especially on the part of women, thus temporarily halting the trend in the opposite direction.

By the Civil War era, the ironmaking and coal mining industries were rapidly expanding. For example, Northumberland County went from 13 collieries, producing about 200,000 tons in the late 1850s, to more than thirty collieries and well over a million tons by the mid 1870s, with steady increases into the late 1880s.[8] Towns such as Danville, Bloomsburg, Berwick, and Milton became important manufacturing centers for the iron (and steel) industry, turning out T-rails, railroad cars, mine cars, ornamental fencing, and much more. At the same time, the northeastern Pennsylvania anthracite fields were gearing into full swing. Many coal-patch settlements sprang up within the North Branch agricultural region, like Centralia, Mount Carmel, Mahonoy, etc. The larger mining-centered cities of Wilkes-Barre and later Scranton were within easy reach by rail connections after about 1860. The farming counties nearby quickly adjusted to cater to these markets.[9] The rising non-agricultural populations in these industries, along with the urban commercial establishments that developed to serve them, created a market for foodstuffs. For example, Northumberland went from 41,000 in 1870 to 122,000 in 1920; Lackawanna/Luzerne from about 225,000 to 750,000. Overall, while farming remained highly diversified, a greater proportion of products was exchanged in the cash economy.

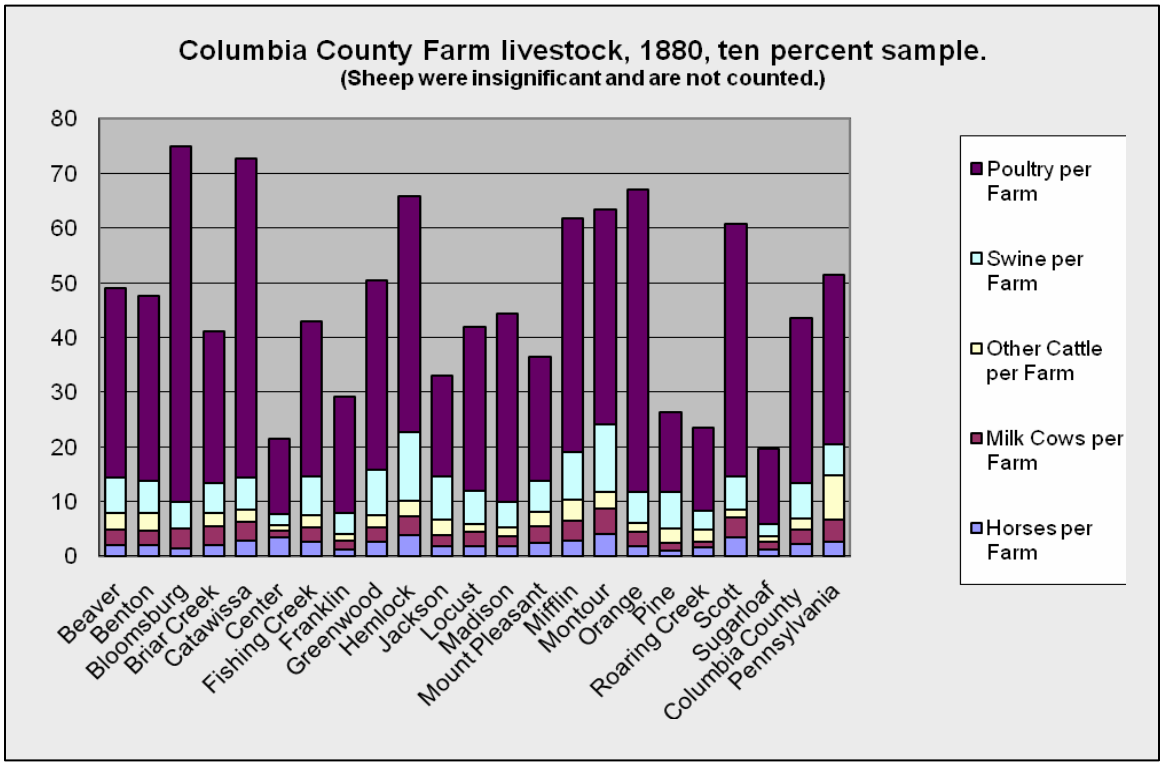
A Lycoming County farmer captured this situation nicely in an 1898 letter to the *National Stockman and Farmer*. S. F. Rentz reported: "We do mixed farming here, that is, we raise wheat, rye, oats, corn, buckwheat and potatoes. We have a good local market at Williamsport. We make butter and sell it to customers at a stated price the year round, delivered every Saturday, also eggs. We have a good grain market up the Loyalsock [sic]

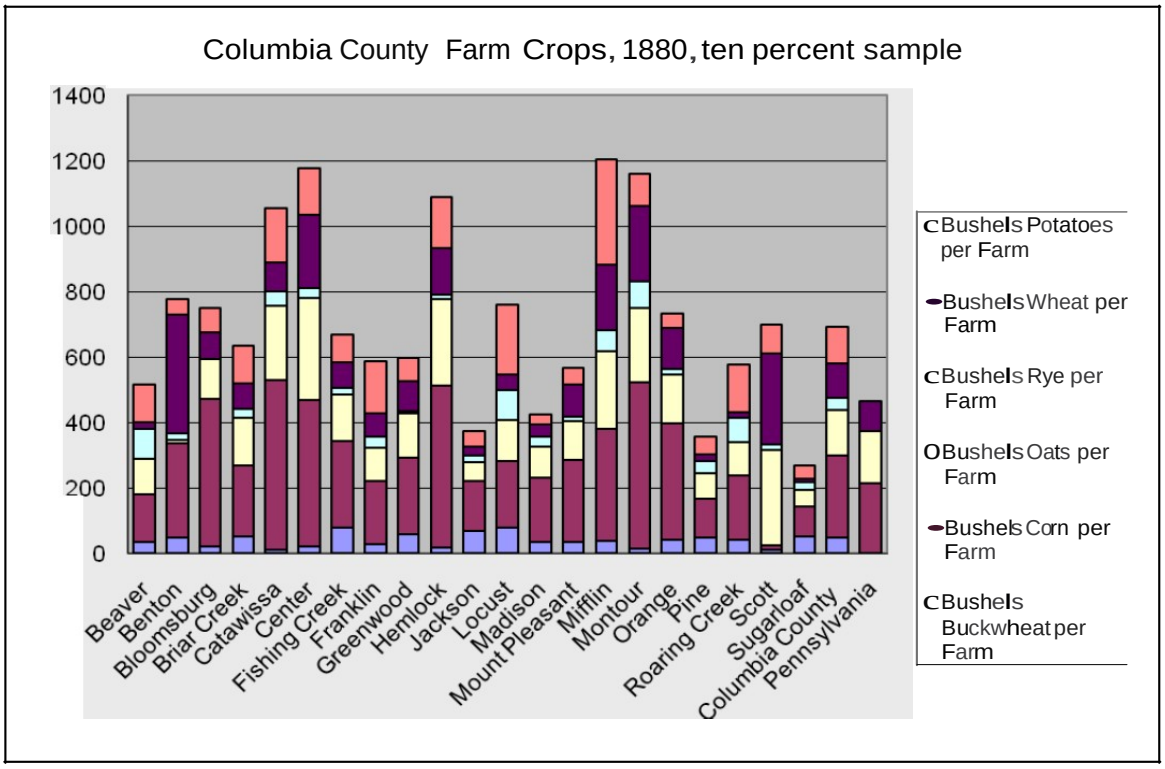
– that is, for corn, oats, and hay. Our wheat goes to Montoursville, where there is a large mill that will take all the wheat raised here. We raise stock and sell some fresh cows to the milkmen every year. We also raise hogs."[10]

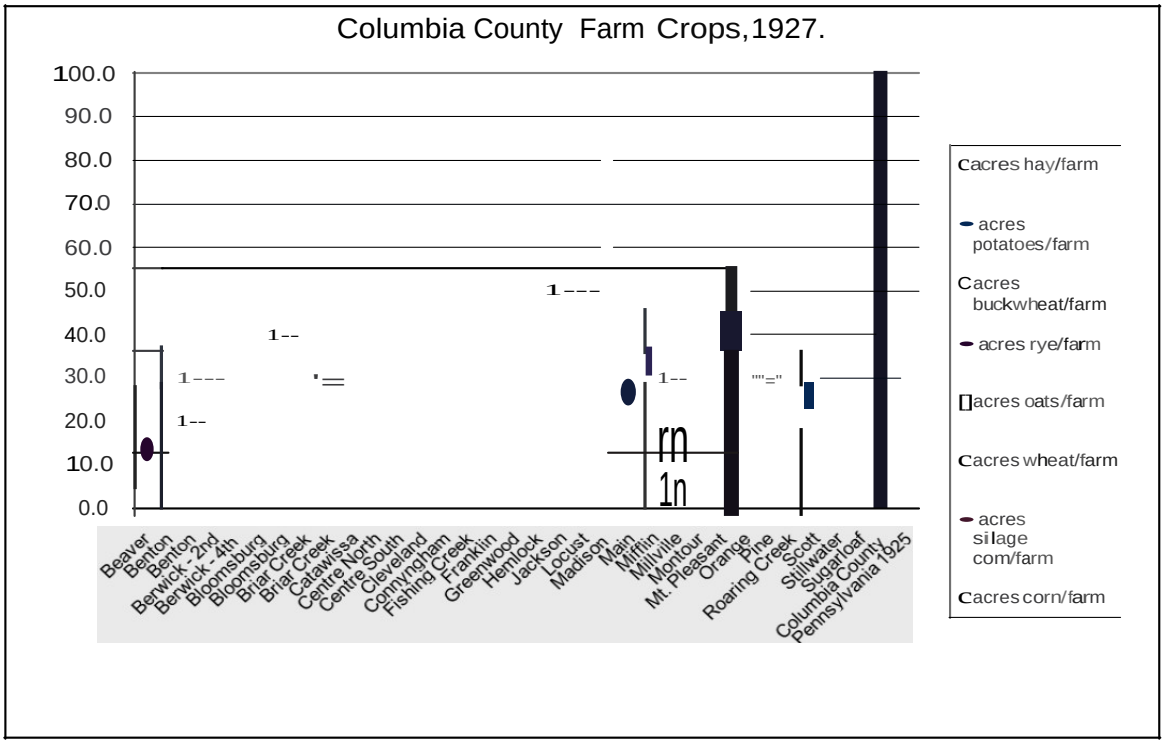
Products, 1860-1940

Western wheat, flour, and to some extent beef presented stiff competition for their Pennsylvania grown counterparts; but local farmers could offset these losses by developing and selling more perishable products and local specialties. Census data from Columbia, Montour, and Snyder Counties suggests that many farms were pursuing a corn-and- livestock strategy, feeding corn to swine and poultry. Corn production in many townships was well above state levels, as were numbers of swine and poultry.[11] Potato production was also well above average. Conversely, these farms supported below average numbers of beef and dairy animals. Farm-made butter production dropped below the state average, and fluid milk production was also relatively low in most townships.

These charts show how Columbia County emphasized corn and hogs, and also basic continuities from the late 19th into the early 20th century.







So, some products were featured more than others, but always within the context of a highly diversified mixed agriculture. It is the *pattern* of diversification that marks out the region, rather than the *fact* of diversification. As before, very few farms could be called "specialized." Around 1900, a typical farm in the region featured a crop and livestock mix that would include poultry and poultry products (mainly chickens but also some

turkeys); pigs and pork; market produce, including small and large fruits and vegetables, especially potatoes. The Union County report to the state agriculture board in 1882 noted that local farmers had shipped out "thousands of bushels" of potatoes by rail.[12] Typically, farms produced just enough butter to supply household needs; corn and hay for feed and for sale; and smaller-scale sidelines such as cider; honey; buckwheat flour; and even fresh fish. Selected directory entries for Center Township, from the 1901 *Directory of Columbia and Montour Counties*, will give a flavor for these enterprises:

- Harris Philip, Cabin Run, Justice of the Peace, grower of berries and peaches 1600 trees, nursery peach trees and berry plants, dairy 5 cows, farmer 75 [acres]
- Ruckle, George, Orangeville, breeder of full blood Berkshire and Chester White swine, dairy 7 cows and farmer 235
- Sharretts Delmer E, Fowlerville, manuf of field and plaster lime and building stone, breeder of full blood Chester White swine, farmer on shares for Mrs. J L Williams 43 and for Mrs. Alice D Sharretts 43
- Shuman John E, school director, market gardener, stock dealer, dairy 9 cows, farmer 88 Lime Ridge
- Spear Arthur w, Cabin Run, post master, breeder of full blood Plymouth Rock fowls, dairy 6 cows, farmer 76
- Whitemire Daniel B, Orangeville, soldier in com H 178 Reg PA vol, owner of carp pond fish for sale farmer 112[13]

The 1915 county history for Columbia and Montour gave a profile of the region's agriculture. It noted that the area's principal field crops were wheat, buckwheat, oats, corn, rye, and potatoes. Buckwheat was said to be especially important. The author claimed that a variety of "Amber wheat" was a product of Columbia County, developed by William J. Martin of Catawissa. Millville, Benton, Orangeville and Washingtonville vicinity were the centers of buckwheat production. He continued: "the flour from buckwheat is used chiefly for griddle cakes, one of the prominent hotels of New York City making a specialty of serving cakes made from Fishingcreek buckwheat. A small amount of the flour is used to make "scrapple' by butchers, while in Holland it is extensively used in the manufacture of gin. In 1904, when wet weather damaged the crop, quantities of buckwheat were exported to Holland from Columbia and Montour counties."[14]

The 1880 and 1927 censuses do not really suggest a huge amount of buckwheat activity; Bradford County produced significantly more. Perhaps the Columbia County buckwheat

attracted more notice because it was made into flour and consumed by humans, whereas presumably in colder Bradford County it was sown when another crop failed, or served as a cover crop. Another reason is likely that buckwheat was a cash crop in the Susquehanna Lowlands. An excited correspondent wrote the *National Stockman and Farmer* in 1902 from Lycoming County that ""buckwheat was good crop and thousands of bushels shipped from Hughesville, which probably brought in more ready money to the farmers than any crop that was raised this year."[15]

The 1929 agricultural extension report for Columbia County mentions that potatoes had "come to be one of the principal field crops in the county," having a "ready market… in the nearby hard coal territory." The agent recorded a considerable interest in "storage houses" and helped demonstrate techniques of "pitting" potatoes when cellar storage was unsatisfactory or inadequate (1927, 1933).[16] Columbia and Snyder Counties doubled their potato acreage between 1884 and 1924. The acreage in the remainder of the counties in the North and West Branch region stayed steady, but increased yields meant greater production. The growth in the potato industry was part of a wider adjustment by Pennsylvania farms as they sought products for nearby markets. The Union County agricultural extension report for 1920 noted that: "a general practice of the farmers in Union County is to grow all the farm crops possible, and in addition run a dairy." Union County river bottom farms produced corn, early potatoes, hay and livestock, and truck crops, while the shale lands yielded corn, oats, potatoes, buckwheat, and livestock.[17]

The role of swine in the local economy was still prominent early in the twentieth century: the 1915 history stated that "it is taken for granted that the average farmer will raise enough pork for his own use, and that is true of Columbia and Montour counties, but in addition enough hogs are raised to make the industry quite a lucrative one to the shippers supplying outside markets." Berkshire, Chester White, Duroc-Jersey, and Poland-China were the most popular breeds, "all of the fat or lard type of swine".[18] Pigs were highly visible throughout the region, not just in Columbia and Montour Counties.

These data from the first decades of the twentieth century therefore reinforce the picture of mixed farming, with a focus in poultry, hog/pork production, and perhaps buckwheat, fruits and vegetables. The level of corn production suggests that grain was sold as well as fed to animals, since silage was still unimportant in the region.

Labor and Land Tenure, 1860-1940

Family labor still predominated on farms in this period. On average, the 1880 manuscript census indicates that a typical farm seldom hired even a single laborer (usually male) for more than 28 weeks, and most made do with ten or fewer weeks. The product mix suggests that all family members performed productive work. For example, women churned butter for the household. All family members helped to tend, harvest, and process fruits, large and small. Apple butter making was an important communal activity.[19] Swine, an important part of this local economy, traditionally were fed by women and children and were often paired up with poultry, also women and children's responsibility. Swine killing, butchering, and meat processing was a community affair, usually accomplished in groups of families each fall. A photo in the Union County local history shows butchering in 1902. It shows the *vorhof* clearly. Field crops such as hay, wheat, corn, and buckwheat were planted, tended, and harvested primarily by men, though it is more than likely that women still participated in haying and grain harvesting. Maple sugar making was family labor, and if Somerset County trends held elsewhere in German Pennsylvania, the trend was toward more participation of women and children as the technology changed.

The diary of a Columbia County farmer's wife at the turn of the twentieth century illustrates these patterns. Mrs. Wilson E. Creasy kept a diary in 1905. At the year's beginning, she wrote:

> Jan. 2: Today I churned and fixed for butchering.
>
> Jan. 13: Today I sowed [sewed], helped Grandmother with her dress. Mrs. Kelchner was here in the afternoon. Mary had speaking at school, she spoke "Pussy to Tea."
>
> Jan. 27: Baked bread and fixed a comfort. Cold.
>
> Feb. 10: Baked bread and doughnuts this forenoon, this afternoon Mother & I finished piecing our goose chase quilt.
>
> Feb. 13: I did my morning work and then did a big churning . . . cleaned the privy.

> Mar. 7: Baked bread and pies. Anna and Martha, baby, was hear, helped me quilt all day. Mrs. Kelchner helped a while this afternoon, John Dieterich came this evening to work for us till April first. Hung up our first meat to smoke.
>
> Mar. 17: Baked bread, cookies, pies, kept fire in smoke house, cut carpet rags this afternoon, W.E.C., Jim Williams was to Bloom[sburg].

These excerpts show that Mrs. Creasy was involved not only in churning, but also in butchering; perhaps John Dieterich was hired to help with butchering. We may infer that this early butchering was done for sale, because Mrs. Creasy notes at one point that "Mrs. Albertson was down for lard, 3 1/2 lbs.", and that "Alice Sharretts got 7 lbs. side meat and 5 lbs. spare ribs" and later on she explicitly notes that "Oct. 24: I baked bread & pies, killed a hog for our own use." [emphasis added]

Mrs. Creasy and her daughter tended, killed, and cleaned chickens (also "catched chickens to sell"); made a duck house for nine baby ducks; churned; made soap; baked; and cooked for the "thrash men." On September 13, she laconically reported: "I baked bread and churned and canned peaches. The baby was born in the afternoon about a quarter to six." In spring, she cleaned the summer kitchen, and in summer the garden kept her busy harvesting, canning, and saving seeds. She referred to a "truck patch" which suggests she was selling garden produce.

Mrs. Creasy noted often that her husband traveled to Bloomsburg or other nearby towns, to market, to get horses shod, to auction sales, etc. At one point, his wife noted "I was alone with the work at the barn." He also cut corn, shelled corn, and helped in threshing. Creasy also was active in the Grange and other agricultural organizations.[20]

As the Creasys' lives show amply, diverse subsistence production flowered in these years. Farms were well established and families looked to gain a "competency." The word was flexible, but connoted a comfortable living. Old methods for processing and preserving foods (drying, pickling, smoking, etc) continued, and newer ones (notably canning and preserving jams and jellies with now inexpensive sugar) were added to the repertoire. Pennsylvania German foodways flourished as traditional foods such as scrapple, sauerkraut, schnitz, etc. were augmented by pies, jams, preserves, and baked goods. Much of this was created through the energies of women. Successful farming depended very much on the combined labor of men, women, and children.

Some observers complained that local industry and urban businesses drained labor away from the farms, especially women. For instance, in 1901 a writer from Northumberland County, opined that "Girls do not do house work on the farm, they work in the various mills and factories in the day time and mop up the sidewalks along the principal streets of our towns at night, while their mothers wash and iron for them and make pastry through the week to feed their male friends on Sunday." Clearly this critic had an axe to grind, but it is not at all surprising that farm girls might be attracted by the higher pay and possibly less arduous work in town.[21]

During these years, Columbia, Montour and Northumberland County farms continued the previous trend as far as farm size and mechanization were concerned. That is, they were at once smaller and more mechanized than the statewide average. Mechanization actually increased relative to the statewide patterns. This phenomenon should probably be attributed to the availability of locally manufactured agricultural implements, and to competition for labor from local industry. During the Civil War, the pace of mechanization accelerated; the firm of Geddes, March, and Co. in Lewisburg twice doubled its output of reapers patented by Obed Hussey. Together with another factory, this industry was the "largest employer in Lewisburg."[22]

Farm technology continued to be dominated by horsepower. By 1927, in most townships, less than a quarter of farms had tractors; slightly more, but usually a minority, had [stationary] gasoline engines; very few had electrical power. Not surprisingly, household conveniences such as running water were also uncommon. However, autos or trucks were nearly universal. Thus late in this period we should look for the impact of autos and trucks.

With respect to land tenure, while Northumberland and Snyder Counties had a slightly higher than average rate of tenancy – from a quarter to a third -- Montour and Columbia were right at the state average of about 20 percent in 1927. A fifth of all farms is not an insignificant figure; at least one site surveyed in field work did have two houses (109-UN-002, Union Township in Snyder County.). So, the occasional tenant house is to be expected, but field survey work did not uncover pervasive impacts of tenancy otherwise, as were found in higher tenancy areas of the Central Valleys.

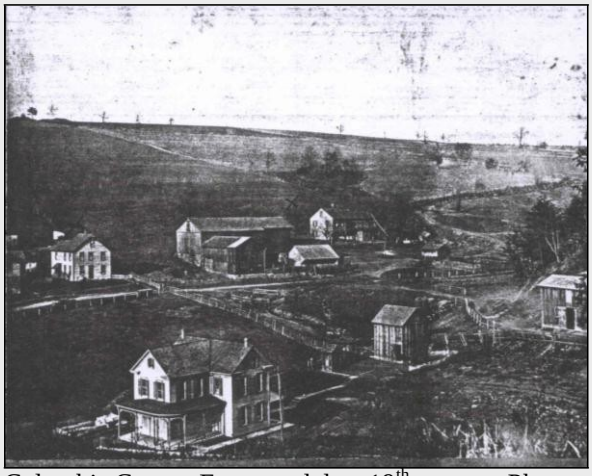
Production, labor, and land tenure patterns continued to be influenced by ethnicity. Some areas may have become even more Pennsylvania German than ever. The Mahontongo Creek area, for example, was a heavily Pennsylvania German area, and Snyder County

one of the most thoroughly Pennsylvania German in the entire state.[23] Indeed, Pennsylvania Germans were important, if not dominant, in the agrarian communities of the region. A Pennsylvania State College Rural Community Study reported in 1923 that In Middleburg "in stores and at social events one hears a good deal of Pennsylvania Dutch."[24] By the early 20th century, significant numbers of immigrants from Eastern and Southern Europe resided in the area, most of them working as miners and laborers. Slowly they began to appear among the ranks of farmers. A 1922 social survey of Columbia County noted, "Poles, in considerable numbers, have occupied farms, especially south of the Susquehanna River."[25] The Department of Rural Sociology and Agricultural Economics community studies noted that in Columbia County "marginal farm is being abandoned, while whatever farms are taken up, are purchased by the Catholic Lithuanian, Poles and Slavs who are coming to take them up." However, survey work did not identify any particular landscape manifestations of these ethnic changes.[26]

Buildings, 1860-1940

Houses, 1860-1940

Five bay house updated with center gable, French doors, 2/2 windows, and bracketed porch and cornice, Greenwood Township, Columbia County, c. 1867. Site 037- GR-006.



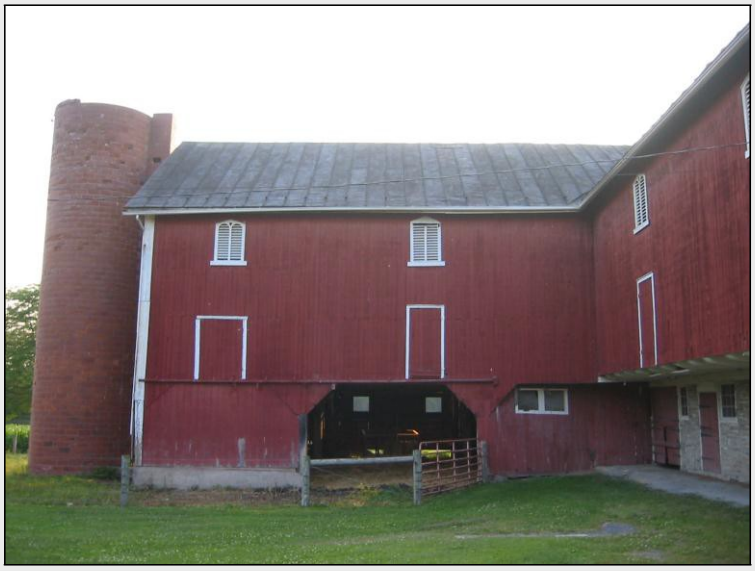
Columbia County Farmstead, late 19th century, Photo #04-0791, Columbia County Historical Society.

There seems to have been a boom in house building between about 1860 and 1900 in this region. This observation is based on survey work and historic images, with dating according to standard analysis of architectural detail.[27] The rural housing stock from the late 19th century essentially continued forms established earlier, but with greater symmetry, contemporary ornament, and simplified construction systems such as plank. (It is hard to tell from field survey, some examples may be earlier, but updated with Victorian era trim.) Also, the occasional form based on national popular-culture models appeared. For example, Columbia County Historical Society photo #04-0791 shows a later "T" shaped two-story house with end chimneys and elaborate porches. The nineteenth-century *Atlas of Columbia and Montour Counties* illustration shows a five bay, two room deep house with rear two story extension and end chimneys.[28] However, in general, it seems that new houses were conservative in form, electing to recognize fashion through relatively minor concessions to ornament rather than through adoption of popular forms such as the Victorian or bungalow.

Barns, 1860-1940

The main barn, invariably substantial, might be a standard Pennsylvania barn, but more often it was a three-gable barn. The three-gable barn might essentially consist of a Pennsylvania barn with a somewhat smaller ell; or the "L" shape might be integral from the outset. For example, Columbia County photo archives from the late 19th century show rather large frame bank barns with ell gabled additions. One has a single gable end addition, another has two; one has a machine shed under the barn and drive through corn crib/machine shed. A third picture shows a Pennsylvania forebay barn with gabled ell.[29]

"America" Barn, Greenwood Township, Columbia County, mid to late 19th century. Site 037-GR-004.



Pennsylvania forebay barn with ell (Three-Gable Barn), Delaware Township, Northumberland County, 19th century. Site 097-DE-006.

However, another pattern found in fieldwork seems to set the barn in the North and West Branch region apart from barns in other regions: the evidence suggests that some barns tended to house more functions than elsewhere. It is less usual to find simple, standard Pennsylvania Barns. The three-gable barn is the norm; and even these tend to house numerous functions and to have extensions of various kinds. In other words, these barns centralize even more functions than is typical in Pennsylvania. They tend to have lots of accretions, or they are divided internally for many functions, or both. So, for example, site 037-GR-004 in Greenwood Township, Columbia County, has a large three-gable barn that includes the usual threshing floor, hay mows, and straw shed, but also a poultry

extension; a pig pen in the lower level of the straw shed; and two sets of cattle stanchions. This farmstead lacks a freestanding pig sheds and poultry houses, suggesting that this family chose a centralizing strategy. Another example is Snyder County, Union Township site # 109-UN-002, which has a three-gable barn with 3 or 4 machine shed type extensions added onto the "ell."

Despite this centralizing tendency, farms in the region were also likely to have a complement of outbuildings. The most important of these are described below.

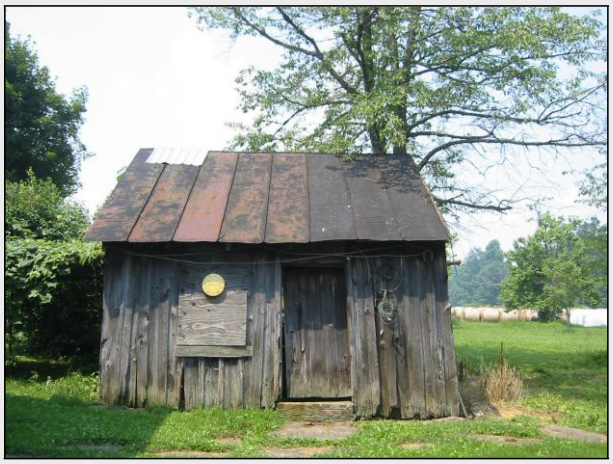
Pennsylvania forebay barn with multiple accretions, Greenwood Township, Columbia County, 1850-1950. Site 037-GR-008.

Three-Gable Barn with shed roof poultry additions, Greenwood Township, Columbia County, Site #005.

Butcher House, 1860-1940

CRM surveys in the 90s documented in Snyder County along Route 15 "an unusual little outbuilding type. It looked somewhat like a summer kitchen, but not exactly, had lots of doors and windows, and a highly finished interior." These were locally known as "butcher houses." They always were very "highly visible from the road." "Over a third of farmsteads in the project area" (the Susquehanna Valley area around Northumberland including Selinsgrove, Lewisburg, Northumberland) had them.[30] These don't have visible chimneys or outlets for stoves. They were mostly frame, dating to the late 19th century. The surveyor who initially surveyed this area questioned the "butcher house" usage because the buildings were so highly finished (that is, more care was taken in matters of architectural trim such as mouldings, use of better grade siding etc.). The census from both 1880 and 1927 confirms that swine populations were much higher in this region than in the rest of the state, so it follows that processing facilities would reflect this aspect of the farm economy. Butcher houses are also frequently found in the Great Valley.[31]

Butcher house, Greenwood Township, Columbia County, c. 1875-1900. Site 037-GR-004.



Butcher house, North Center Township, Columbia County, late 19th-early 20th century. Site 037-NC-001.

The nomenclature used for these buildings is somewhat misleading. Butchering facilities in other areas (Berks County, Somerset County) sometimes were accommodated in the summer kitchen or washhouse and sometimes in "butcher sheds" (Berks County HABS has one example.) These housed large set-kettles encased in brick, along with tables and shelves. There were indeed ample windows, presumably to provide the necessary light for the work of cutting up carcasses (which would come into the butcher house already scraped and gutted), cooking, sausage stuffing, scrapple making, etc. However, in the North and West Branch region, the buildings that were called "butcher houses" did not have provision for cooking. It seems that they served for cutting up meat and perhaps preparing meat for smoking or sausage making. They did not exhibit a consistent roadside siting, nor did they always have unusual levels of architectural finish. Architectural historian Jerry Clouse says: "Regarding butchering, a whole half of a hog was removed from the gallows or hog hangers to be cut up into shoulders, hams, bacons, etc. Often sausage stuffing, scrapple making, etc. took place outside. The pans of scrapple, coils of sausages, hams, shoulders, slabs of bacon, etc. were laid out on a long table(s) in a butcher house/shed to cool. The hams and shoulders had to cool for six hours to a temperature just above freezing. Then the hams and shoulders went through a two-week curing process. Then they were ready for smoking."[32] Thus the "butcher" function pertains not to the actual butchering, but to the cooling.

These buildings are strong evidence of production strategies, possibly also Pennsylvania German foodways. Jesse Houseknecht's father killed four hogs a week during the Depression and peddled them himself on a route in Muncy, Lycoming County. The family farm had a butcher house with an adjoining space that housed a kettle for making scrapple and equipment for sausage making.

Smokehouse, 1860-1940

Smokehouses continued to be built and heavily used, well into the twentieth century.

Smokehouse, Union Township, Snyder County, c. 1910. Site 109-UN-002.

Spring House, 1860-1940

Spring houses continued to serve important functions into this period. The frame springhouse shown here is sited near the house, reinforcing its importance to women's labor. On field survey sites, several springhouses were built (or perhaps rebuilt) of modern materials such as concrete block. Butter was not made in commercial quantities, but there was still a need for cool storage and processing space for household use.[33] This photo shows collective work (though perhaps it was posed), and also the two-story springhouse is in the background.

Springhouse, Delaware Township, Northumberland County, c. 1920. Site 097-DE-005.

Concrete block springhouse, Locust Township, Columbia County, c. 1930. Site 037-LO-005.

Machine Shed, 1860-1940

These should be interpreted as evidence for a relatively high level of mechanization in the region. These buildings are very common, and coupled with evidence for a high value of

implements per farm, we can fairly conclude that machine sheds express high farm mechanization.[34] During this period, machine sheds were most likely to be built in frame. Typically they would have at least one wide bay on the eaves side to admit machinery. Often they would have a corncrib integrated.

Molded concrete brick machine shed with ground level root cellar, Locust Township, Columbia County, c. 1930. Site 037-LO-004.

Machine shed, Locust Township, Columbia County, c. 1930. Site 037-LO-007.

Combination corn crib and machine shed, Jackson Township, Dauphin County, c. 1900-1930. Site 043-JA-007.

Machine shed and corncrib, Greenwood Township, Columbia County, c. 1935-40. Site 037-GR-002.

Summer Kitchen, 1860-1940

Summer kitchen, Probst farmstead, Clinton County, c 1916. HABS photo by Rob Tucher, 1991. Historic American Buildings Survey website, Survey number HABS PA-5523-B.

In general in Pennsylvania, especially German Pennsylvania, the late 19th century witnessed a wave of summer kitchen building. The very term "summer kitchen" did not seem to come into common use until the mid 19th century.[35] 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 19th 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 cook stove into the main house for the winter, and into the summer kitchen for the summer.[36] 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.

Summer kitchen, Union Township, Snyder County, c. 1875. Site 109-UN-003.

Summer kitchen, corncrib, and privy, Greenwood Township, Columbia County, c. 1900. Site 037-GR-008.

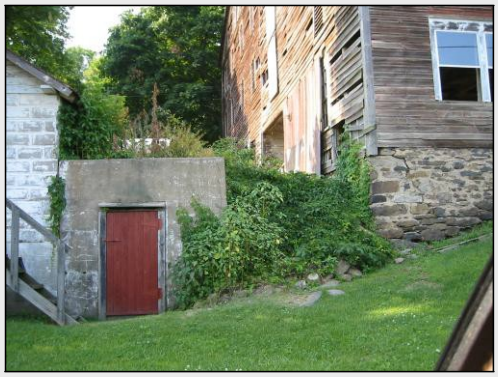
Mid-century summer kitchens might be built of brick or frame; later summer kitchens tended to be frame. Summer kitchens typically had a higher level of finish than would be found in rougher outbuildings; stove or set-kettle; tables; windows. Some historians suggest that families actually ate meals in 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 cook stove, and sustained primarily by farm women.

Summer kitchen and smoke house, Jackson Township, Dauphin County, c. 1870-90. Site 043-JA-004.

Root Cellar, 1860-1940

Root cellar, Muncy Township, Lycoming County, early 20th century. Site 081-MU-007.



Root cellar located between barn and ice house, North Center Township, Columbia County, c. 1930. Site 037-NC-006.

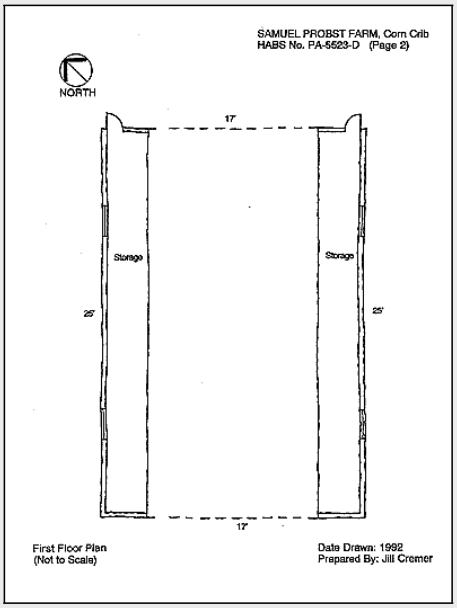
A root cellar consists of an excavated underground area, lined with masonry and sometimes shelves, and having an entrance. It's usually between the house and barn. Sometimes its roof is barrel vaulted. Its purpose is to exploit the year-round constant temperature that prevails below frost level (around 50-55 degrees) to preserve such items as potatoes, carrots, cabbages, Brussels sprouts, kale, turnips, and other root crops. Some

older houses in southeastern Pennsylvania had root cellars adjoining the main house and accessible via a tunnel, but these were uncommon in the North and West Branch area.

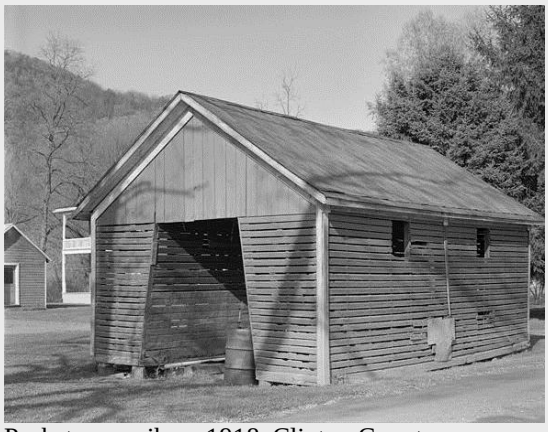
In this region, the root cellar *may* be related to the relative importance of potatoes; to Pennsylvania German food ways (cabbage and other root crops).

Privy, 1860-1940
As few farms had indoor plumbing, outdoor privies persisted into the twentieth century.

Corncrib, 1860-1940



Probst corncrib, c. 1918, Clinton County, Photo by HABS. Survey number HABS PA-5523-B, Historic American Buildings Survey website.


Probst corncrib, c. 1918, Clinton County, Photo by HABS. Survey number HABS PA-5523-B, Historic American Buildings Survey website. Photo by Rob Tucher, 1991.

Generally speaking this building occupied an important place in the agricultural economy of the North and West Branch region, because field corn was a primary feed for hogs. More corncribs were documented in the fieldwork than almost any other outbuilding. The corncrib was needed to store field corn in the ear. 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). The earliest corncribs were made of log; it's doubtful that any of these survive in the study area. "Keystone" shaped cribs, flaring from bottom to top, were designed to prevent settling and shed water. Once machine-milled beveled boards became available, designs tended to feature straight sides rather than flared ones. "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 corncribs 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.[37] In these areas especially where swine raising was important, corn was used for feed, so we'd expect to see corncribs.

Corn crib with loading slots in clerestory arrangement, Union County, c. 1940. Photo only site, no site number.

Hog House, 1860-1940

Hog shed,, Lower Mahanoy Township, Northumberland County, c. 1940. Site 097-LM-004.

Hog house showing exterior doors, Union Township, Snyder County, c. 1900. Site 109-UN-001.

The hog house was an important component of the North and West Branch farmstead. The hog pen (*schwein-stall*) occupied an important place on the Pennsylvania German farmstead. Located on the

forebay side of the barn, or between house and barn, it was south facing, well drained; and sometimes shaded. The hog pen was a mixed-gender workspace. Kitchen scraps and skim milk or whey were fed to the hogs. The hog pen sometimes had hens' quarters above; since women and children were in charge of both, it served as a multipurpose workspace. Hogs were a cornerstone of family subsistence and Pennsylvania German foodways – from them came hams, sausages, scrapple, and other ethnic delicacies. In the North and West Branch, hog pens also indicate the importance of selling pork to local markets.

Hog pens had a shed roof or a gable roof; a door in the gable end or side. Hog pens of the late 19th and early 20th century generally had windows placed above hogs-head level, with doors leading to fenced runs. The hog pen was designed to ensure warmth and dryness; these had to be balanced with ventilation. The hog pen and corn barn were natural complements.[38]

Hog house,, Locust Township, Columbia County, c. 1930-45. Site 037-LO-004.

Hog houses, Delaware Township, Northumberland County, c. 1900-1940. Site 097- DE-002.

Hog house, Halifax Township, Dauphin County, about 1930-50. Site 043-HA-002.

Hen/Poultry House, 1860-1940

Poultry house, Greenwood Township, Columbia County, c. 1930. Site 037-GR-005.

Woman with turkey and turkey house behind. Columbia County Historical Society, Columbia County, Picture #14-1066.

This poultry housing is not typical but notable, and may have been used for turkeys. North Center Township, Columbia County, c. 1890-1930. Site 037-NC-001.

Farm flocks were small compared to today-- usually several dozen fowl to more than a hundred-- but above state averages, again reflecting local marketing opportunities. This was especially true in Lower Mahanoy Township in Northumberland County. Shelter usually consisted of a frame building with shed roof, perches and nesting boxes, and access doors. Rows of windows afforded ample lighting. Sited equidistant from house and barn, these structures should be interpreted as reflecting women's and children's labor. The Columbia County published agricultural extension report for 1918 shows a poultry house and a bunch of women and men at a demonstration (siting near the house, essentially in the front yard).

The Union County agricultural extension agent report for 1923 noted that "The modern Pennsylvania State Laying House is becoming very popular and 50% of all the new poultry houses built in this county are of this type."[39]

Twin poultry houses, Halifax Township, Dauphin County, c. 1930-1950. Site 043-HA-002.

Silo, 1860-1940

However, the 1927 census shows that no more than ten or fifteen percent of farms had silos. Pennsylvania Agricultural History Project fieldwork confirmed this; silos were relatively uncommon.

Corrugated concrete stave silo, Jackson Township, Dauphin County, c. 1945-65. Site 043-JA-007.

Milk House, 1860-1940

A number of sites had milk houses, but not silos, suggesting fluid milk dairying on a very modest scale. These probably date to the very tail end of the period. A milk house is a small structure used expressly for the purpose of isolating fresh milk from the smells, dust, and microbes of the barn environment. While the earlier springhouse housed and cooled fresh milk and provided a space for letting cream rise and for churning, the milk house is a twentieth-century phenomenon. A springhouse would be located over a stream or spring, but a milk house would normally abut, adjoin, or sit near the barn. A milk house would also be sited conveniently near the roadside for easy pickup. The milk house was a small (typically ten or twelve feet on a side) structure with a square or rectangular footprint. Construction materials were often masonry, including concrete block or rock face concrete, but sometimes frame. Most milk houses have gabled roofs, but some have a shed roof.

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 and dry 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. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk.[40] All of these plans had sloping floors with drains, and provision for ventilation and light.

Milk house, Greenwood Township, Columbia County, c. 1930-50. Site 037-GR-001.

Tile silo and milk house, Liberty Township, Montour County, c. 1930. Site 093-LI-008.

Actual milk houses on farms that were surveyed tend toward the smaller end of this range. While many are freestanding, gabled structures, shed-roof barn extensions are also common. The most common material is concrete block. Milk houses are much less common in the North and West Branch Susquehanna Historic Agricultural Region, where dairying did not gain hold rather late, and in pockets rather than in a wide area.

The milk house should be interpreted as a symbol of the expanded role of the state in farming. By the early twentieth century, municipalities had begun to regulate in the name of public health. Large milk markets like New York City, in an effort to curb the spread of diseases such as tuberculosis and to ensure a clean, fresh and unadulterated milk supply, began to demand that farms producing fluid milk erect separate spaces to isolate the milk from the barn. The agricultural establishment promoted these changes, too, through research into bacteriology, and also by supplying model plans for the buildings themselves. The milk house therefore is a building type that has a much more standardized, less regional appearance than other, earlier outbuilding types.

The milk house also symbolizes the shifting gender distribution of labor in dairying. While many farms continued to produce butter – made primarily by women – milk

houses mainly signified a shift to fluid milk sales, a branch of dairy work that became more associated with men. It was still very much a family enterprise, but with the strong association of women with butter making removed, women's role in dairying was increasingly regarded as ancillary rather than central.

Tenant House, 1860-1940

Tenancy rates in this region varied. In most of the region, they hovered around the statewide rates for the time period. In a few pockets, though, tenancy was higher. This information is available on a township by township basis for 1880 and 1927. It was common for farms to be operated under different land tenure arrangements at different periods in its history. Architecturally, tenancy's manifestations also were varied. If a tenant rented a large acreage, that farm would essentially be indistinguishable from an owner-occupied farm, since the evidence shows little difference in production profiles, mechanization levels, etc. Sometimes, a tenant would rent only a small portion of a larger farm that was owned and operated by the landlord. In this case, the farm property might have more than one house. A good example of a farm with a history of tenancy is Snyder County site # 109-UN-002. This site has two houses sited side-by-side. From exterior architectural evidence, it is hard to date them; both have been much altered. One is a five-bay front with asymmetrical fenestration; the other is smaller and looks as if it is only one room deep. According to the owner, the smaller house was built first. The owner also said that in the 1930s the smaller house was a tenant house associated with ten acres planted in potatoes.

Landscape Features, 1860-1940

This photo shows many characteristic landscape features of the late nineteenth and early twentieth centuries: a picket fencing around the house, wood-and-wire fencing around fields; ornamental trees sheltering the house; small front yard; fields reaching almost to house and barn; haystack; and dirt farm lane. Also, this farmstead shows a linear organization of buildings and enclosures and ornamental and shade trees for both humans and animals. Lycoming County Historical Society, Photo #9666, no date.

This photo shows a linear pattern of farmstead building organization, Lycoming County Historical Society, Photo #10700, undated.

Garden

This garden is visible behind the house, Columbia County Historical Society, Photo #30-0065, c. 1900.

George Franklin Dunkelberger describes the garden: the garden was more fertilized, protected, and more carefully tilled than the other fields. It was divided into "plots… reserved for particular vegetables. These plots were separated from one another by paths made by boards placed on edge and supported by stakes. Scraping these paths at regular intervals with a garden hoe to keep them free from grass and weeds constituted the laborious task of the growing boy. The garden crops were the stable [sic] vegetables such

pumpkins, turnips, watermelon…" Dunkelberger notes the *glabbord*, or picket fence, around the yard and garden, which were whitewashed yearly.[41] This description also gives a rich picture of the competency. Gardens are increasingly rare on farm properties.

Relationship of Farm Buildings

Photos suggest tight relationships among farm buildings. Many farmsteads depicted in period photographs show a strong linear pattern. Others had the house and barn divided by a road. Many farmsteads retain their layout.

Ornamental Plantings

It was common for farmhouses to be surrounded, indeed often obscured, by ornamental trees. Typical features included picket fence, drive, and combination of deciduous and evergreen trees around the house. Ephemeral plantings, such as clumps of perennials or shrubs, would not survive from this period, but windbreaks or large sentinel trees could remain.

Boundary Demarcations – type of fencing, tree lines, hedgerows, paths, etc.

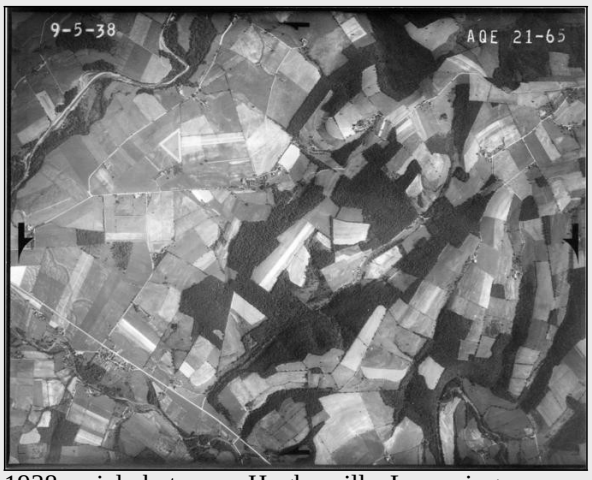
Photographs from the period show an increasingly complex hierarchy of fencing. Often, a white picket style circled the house, post and rail enclosed horse and barn, and worm or stump fences were arrayed on the perimeter. Treelines and ditches still divided properties and fields.

The 1877 *First Annual Report of the Board of Agriculture* for Pennsylvania reported that the overwhelming proportion of fences in the state were worm fences, followed by post and rail, and last by board fences.[42] By the twentieth century, barbed wire and woven wire fencing were more common. The latter types of fencing could survive in small amounts.

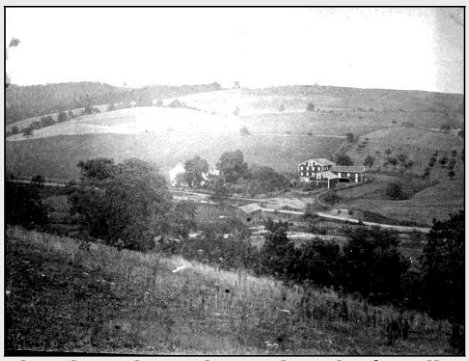
Field Shape, Size, etc.

Turn of the century photographs, reprinted in Snyder's Union County history, suggest a high degree of clearing.[46]

Though contour plowing and strip cropping were advocated by county agents during the 1930s, aerial photos from the late 1930s do not show much evidence for either practice. The aerial photo from Lycoming County is illustrative.



1938 aerial photo near Hughesville, Lycoming County, Image Name: lycoming_090538_aqe _21_65.jpg,. Penn Pilot website.



This photo shows the patchwork of small, irregularly shaped fields, demarcated by treelines. Note also the ornamental plantings nearly hiding the house, Columbia County, Photo #30-0101, from Morris Hill, c. 1900.

Woodlots

Small woodlots appear in many photos, usually mixed evergreen and deciduous trees. Overall, most farms had woodlots and in this region more acreage was given over to woodlots than in the Northern Tier.

Orchards

Aerials from the 1930s show orchards scattered throughout the rural landscape. Virtually every farm would have at least some apple trees. These rarely survive; occasionally remnants are seen.

Fossil Fuel Powered Diversified Production, 1940-1960

During this period, the North and West Branch region agriculture showed continuities with production patterns of the previous period. Poultry production and market vegetable growing expanded; corn and hog production continued, but not as strong; and cattle breeding was a notable, but limited, enterprise. Except for a few places, dairying was not really very important in this region. The shift to combustion power and electrification on the farm was completed in this period, with important consequences. National and global

policies and economics forced a decline in farm numbers, with a rise in average farm size. The money economy became dominant in this period, as even in the context of diversification, most products were sold for cash, and the role of neighborly exchanges declined.[43]

Products, 1940-1960

Poultry raising significantly expanded in the postwar period especially in Northumberland and Columbia Counties, where the 1950 per farm average numbers of chickens (231, 170 respectively) was well above the state average (120). Indeed, in this period the main income-producing enterprise was poultry. Columbia County eggs were marketed to the New York City area through the Bradco cooperative.[44] A description of a large-scale poultry farm in Snyder County 1946 mentions most of the building types related to poultry in the period. Samuel H. Graybill of Richfield started in 1931 with 150 New Hampshires. He added facilities for housing layers, "for brooding his chicks and for marketing [sic] quality eggs until he now has a flock of about 10,000 layers and is completing housing facilities for about 11,000 birds. His facilities include a two-story brooding house with central heating system, two three-story laying houses, and one large four story laying house – all insulated with shavings. A farm shop with machinery for planning, sawing, and making many things needed about his plant – is a valuable part of the setup. Improved pasture range for pullets is a part of Mr. Graybill's program. During this development he has been in frequent consultation" with county agent and Pennsylvania State College specialists.[45]

Swine continued to be a more important locally than in other parts of the state; but overall numbers finally declined in the face of competition from an increasingly large scale Midwestern corn and hog industry. Farms in the area continued the pattern of local market production, including especially potatoes destined for the coal regions, and cannery crops – peas, corn, and tomatoes, marketed through the Hillsboro-Queen Anne Cooperative.[46] The average number of milk cows per farm in 1950 was significantly below the statewide average in this area. Certainly some milk was produced (especially in northern Northumberland County), and shipped out to urban markets on the eastern seaboard and in the anthracite region, but dairying did not have the presence it did in other regions such as the Northern Tier.[47]

Snyder County site # 109-UN-002 is a good example of production patterns in the region for this period. Until about 1950, the farm produced a diversified mix: the four-course rotation of oats, wheat, hay, and corn, plus dairy. In the 1950s, two thousand chickens

were kept in the barn's straw shed and also housed in separate buildings. Then, after 1960, they switched over to soybeans and corn.

There was some cannery crop production in this region. Though truck specialty farms did not represent a large number of the region's farms, towns like Milton, Sunbury, and Mainville were centers of production, mainly for such items as tomatoes and peas. In the late 1930s, the Snyder County agricultural extension agent reported that there were 22 tomato cannery growers in the eastern part of the county. In 1939 he reported: "about 25 farmers contracted acreage with the Chef Boyardee Company at Milton, and grew tomatoes commercially for the second time."[48] Most of the workers in truck patches and canneries were local, but through to the 1970s, Southern African American and Puerto Rican migrant workers came through the region, traveling up Route 15 on the well-established "Florida Itinerary."

Labor and Land Tenure, 1940-1960

Family labor continued to dominate, but the gender division of labor changed. For example, as poultry assumed a more central position vis a vis farm income, men acquired a greater interest in it. Thus the rise of larger scale poultry enterprises (and the standardized agricultural-establishment buildings that came along with it) represent a new gender pattern of labor. Women did not abandon the enterprise overnight, and they never disappeared, but men assumed control.

This period witnessed a decisive surge in farm power away from horses and into the fossil fuel and electric age. In turn, this shift affected farm labor patterns significantly. Scholarship on these technologies in the 20th century rural North suggests that there was a complex interplay in which rural people adopted, adapted, and shaped technology but were also shaped by it. The cultural association of "farm" technology and "productive" work with men intensified, as the tractor and its myriad associated tools mechanized agricultural processes such as plowing, tilling, haying, harvesting, and silo filling. Meanwhile, the agricultural establishment aggressively promoted a "domestic" model of women's work that stressed making farm homes more like urban and suburban ones, and therefore making farm women's work more like urban and suburban middle-class women's work. This strategy de-emphasized women's involvement in "productive" enterprise; farm women struggled with how to embrace aspects of this ideology that may have appealed to them (such as innovations that would allegedly alleviate household drudgery), yet to avoid the marginalization implied in distancing themselves from "market" production.

Rural patterns of collective labor also changed in this period. As hand and horsepower were superseded, the family unit assumed more of the burden of farm work, and communally shared labor declined. Wage labor, present since the 19th century, probably became more important. The reach of global markets also meant that items formerly produced at home, often with shared labor, were now purchased. While local and ethnic ties certainly did not die, they were challenged by an assertive popular mass culture. So, work like butchering, apple butter making, etc. declined. With them went the specialized outbuildings and spaces related to these activities.

Labor patterns also changed in response to the war years. With the increased demand for farm products, combined with the draft and wartime industries, farm families had to reorganize in order to get the farm work done. The Montour County extension agent mentioned that teenagers redoubled their efforts at harvesting and housework, so their mothers could "work in the field."[49]

There was a visible increase in production of cannery crops such as peas, corn, and tomatoes. Canneries were located in towns such as Bloomsburg. These crops demanded intensive labor, most of which came from local sources, but some migrant labor was used and a few migrant labor camps were built for them. For example, for the 1952 season, at its peak the labor force in the Milton (Northumberland County) area was 2,715, and there were 825 workers from "Out of State" and 100 from Puerto Rico. These workers were housed in migrant camps numbering about 20.[50]

Buildings, 1940-1960

Many buildings were re-used or adapted during this period. This applies especially to houses, barns, hog houses, smoke houses, and summer kitchens. These buildings continued in use, but few new ones were put up during this time period. What new buildings were erected tended to reflect the predominant tendency of the period, thus we see garages, corncribs, large poultry houses, milk houses, and machine sheds dating from this time.

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.[51] The Quonset building, made famous during the war, was now marketed for agricultural uses. An April 1957 advertisement in *Farm Journal* featured a happy farmer enthusiastically endorsing his

Quonset® dairy barn. This building type did not achieve much popularity for animal housing, but fieldwork did document at least one storage building in the survey area. (Site 037-GR-007, Greenwood Township, Columbia County; dates uncertain)

Houses, 1940-1960

Fieldwork sites did not have any single family houses dating from this period.

Migrant housing was built for workers harvesting tomatoes and other crops. No migrant housing was documented in field survey work, but period photos can be found in the *Farm Placement Report*. The 1959 report, for example, featured a photo of "good housing for out-of-area workers in the Central Area" and the 1963 report had a photo of "an award winning camp in Lycoming County."[52] Both were long, one-story buildings, one of frame and one of concrete block, built motel-style with multiple doors opening out of the long side.

Barns, 1940-1960

In general, few new barns were built in this region during this time period. A few were found during survey work. They featured new building technologies such as "rainbow" roofs.

In general, rather than build new barns, farm families altered existing ones. So, we find barns adapted for poultry or dairy, used increasingly for machinery storage also.

Dairy alterations do appear. Often the straw shed was enclosed with concrete block for dairy cows. On interiors, the lower levels were concreted and fitted with stanchions. Ventilation was often added. However, as a rule, dairying was not pervasive in the North and West Branch region as it was elsewhere.

Three-Gable Barn with lower level altered for dairy, Greenwood Township, Columbia County, original barn c. 1900, alterations c. 1950. Site 037-GR-002.

Three-Gable Barn adapted for poultry, Locust Township, Columbia County, original barn c. 1920, adaptations c. 1950. Site 037-LO-003.

Banked barn with round roof, North Center Township, Columbia County, c. 1950. Site 037-NC-005.

Milk Houses, 1940-1960

Concrete block milk house and concrete stave silo, Middleburg Township, Snyder County, c. 1930-1950. Site 109-MI-001.

Poultry Houses, 1940-1960

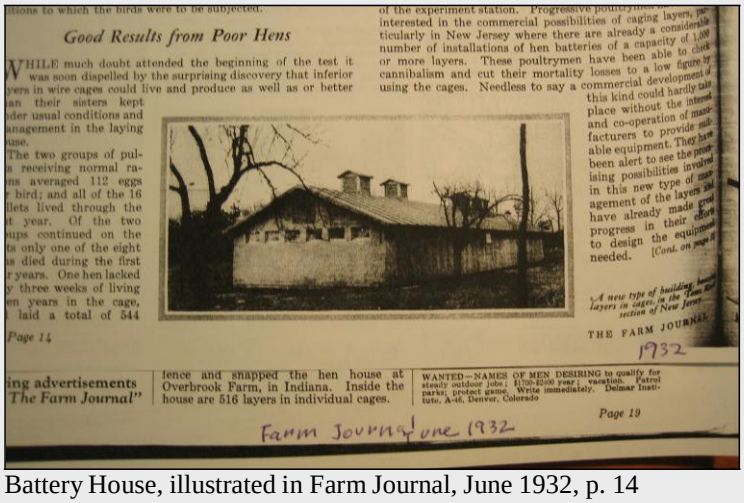
General Developments in Poultry Housing:

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.[53]

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."[54] 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.[55]

Notably, one author pointed out that "battery brooding will produce good birds without much experience on the part of the operator…"[56] The shift to less-skilled labor probably occurred as men took over poultry raising, and also as sheer numbers rose. 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. No field examples of this type were encountered in this study.

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



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, "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.[57] 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. Many continued on a more modest scale and their buildings were correspondingly modest.

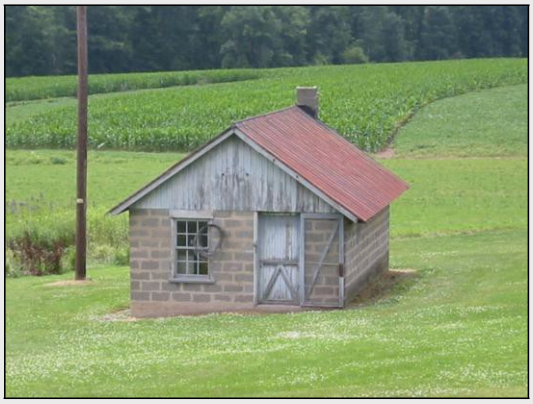
Poultry Housing in the North and West Branch:

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

Poultry houses were very important in the North and West Branch area for this period. Because of local markets and Depression conditions, poultry continued to hold a strong place in the agricultural economy. In Pennsylvania generally, the influence of Penn State Extension and other elements of the agricultural establishment was notable. Even if farmers did not adopt recommended plans down to the last detail, they used standardized materials and followed a few basic layouts, so there are fewer regional differences in the appearances of poultry houses.

As poultry keeping assumed a strong place among North and West Branch farm income producers, it attracted attention from men, most noticeably agricultural extension agents. (Men also became more involved in poultry production on the farm, though poultry labor did not shift over completely to men. The agricultural extension agent reports refer to "poultrymen," but the photographs in their collections always show women at program events featuring poultry.) The chief result on the landscape was the appearance of more poultry housing, often patterned on advice from agricultural extension agents or in farm publications (though many a poultry house was recycled from an existing building. Telltale signs include many windows that clearly are cut into a formerly solid wall.)

Pennsylvania Forebay barn converted for poultry, Lower Mahanoy Township, Northumberland County, original barn c. 1875, alterations c. 1950. Site 097-LM-002.



Brooder house, Locust Township, Columbia County, c. 1935-50. Site 037-LO-002.

The type of housing depended on the purpose. Brooder houses were small structures for hatching chicks; they were often heated by stove, (therefore usually a stovepipe protruding from the center of the roof). These buildings provided a heated space for just-hatched chicks for their first few weeks of life.

When hens reached laying age, laying houses provided roosting perches, open floor space, feed areas, and nesting boxes (individual wall nests, community nests, or nest rooms). The buildings were usually well lighted and ventilated. Depending on the scale of poultry raising, they could be one story, or more. If barns were converted for poultry,

Hatchery on Hatchery Road, Lower Mahanoy Township, Northumberland County, c. 1960. Photo only site, no site number.

Metal poultry house, Lower Mahanoy Township, Northumberland County, 1967. Site 097-LM-005.

it was not unusual to find five or six tiers.[58] Overall, the poultry houses of this period have these frequently seen common features: shed form; banks of windows; frame construction. Snyder County 1930s agricultural extension reports note 30 by 30 foot laying houses in quite a few places.

Setups for producing eggs for hatching differed yet again – these were geared to breeding pullets and feeding them up so they would produce healthy hatchable eggs, then selling the fertile eggs to hatcheries, which then hatched them to sell to poultry people.[59]

Poultry houses, Locust Township, Columbia County, mid 20th century. Site 037-LO-006.

Pole barn showing nesting boxes, Lower Mahanoy Township, Northumberland County, c. 1950. Site 097-LM-003.

Corncrib, 1940-1960

Manufactured corn cribs were produced in the early twentieth century, but disappeared during the metal shortages of World War II. They became popular again in the post-World War II period. Historian Keith Roe says that metal cribs were adopted because wood and labor prices rose, and also because the metal cribs were sturdy and required little maintenance.[60] Two trends combined to make corncribs less common after the mid-1950s: combines made it possible to shell corn in the field; artificial dryers eliminated the need for a long drying period in the crib; and it was often cheaper to purchase Midwestern corn rather than grow it on the farm.

Cylindrical corn cribs, Meisertown, Snyder County, mid to late 20th century. Photo-only site, no site number.

Corncrib, Greenwood Township, Columbia County, c. 1950. Site 037-GR-001.

Machine Sheds, 1940-1960

Machine sheds served the same function they had earlier. In some cases, as machines got bigger, older sheds could not accommodate them. One 1957 *Farm Journal* article featured a building with sliding doors along the eaves side, and "giraffe" door on the end for taller equipment.[61] Postwar machine sheds frequently featured pole construction and newer construction materials such as metal components.

Pole built machine shed, Liberty Township, Montour County, c. 1960. Site 093-LI-002.

Machine shed/corn crib, Lower Mahanoy Township, Northumberland County, c. 1960. Site 097-LM-004.

Garage, 1940-1960

As the motor vehicle revolution came to the farm, so did the garage. Farm garages appeared in the early twentieth century. They were typically rectangular buildings, made of wood or concrete: rock face block, beveled block, or cinder block. They would have large doors (sliding or hinged) on either eaves or gable side; sometimes a human door. Gable roofs were the most common, though some have hipped, pyramidal, or gambrel roofs. Garages have no ethnic association. They are a product of the twentieth century. While perhaps their designs do not show so much standardization as the agricultural establishment-derived poultry houses or milk houses of the era, nonetheless the building materials (not to mention the automobiles and trucks that the buildings sheltered) do show the impact of industrialization. Garages were usually sited near the farmhouse, accessed by a driveway or directly from the road.

Garage, North Centre Township, Columbia County, c. 1960. Site 037-NC-001.

Garage and poultry house combination, Locust Township, Columbia County, c. 1950. Site 037-LO-003.

Potato Storage House, 1920-1960

The Union County agricultural extension agent reported in 1928 that, "Mr. J.L. Reitz, who is one of the largest potato growers in the state, has recently constructed the largest storage house in PA. Its capacity is approximately 50,000 bushels."[62] It seems that Mr. Reitz's operation was an anomaly within this region, as little other evidence of extensive potato raising has been found in research.

Other Outbuildings, 1940-1960

The smokehouses, butcher houses, bake houses, privies, spring houses, summer kitchens erected earlier gradually fell into disuse during this period, or they were put to different uses. Electrification eliminated much of the need for spring houses, summer kitchens, and bake ovens. Some people continued to butcher and smoke their own meat, but many

discontinued raising their own hogs. And the advent of indoor plumbing meant that the privy also was no longer "necessary."

Landscape Features, 1940-1960

Area east of Millville, Greenwood Township, Columbia County, 1959 aerial showing contour strips. Penn Pilot photo number aqr_2w_130, Penn Pilot website, http://www.pennpilot.psu.edu/, accessed March 13, 2012.

In the post war period many important landscape features continued to mark the region. These would include the hierarchy of fencing; ornamental plantings around the farmhouse; relationship of buildings to each other. There were some significant landscape changes, though they took effect gradually. These were principally in the addition of farm ponds; changes in field configuration, such as contour stripping; upgrading of roads; and possibly the decline of farm orchards.

Fields

Small, square-ish fields continued. Contour plowing and strip cropping became more common. 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 slop 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."[63] 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. The Union County agent summarized the local situation in 1939. Erosion had become an increasing problem in Union County, he reported, "partly due to the change in farming over past 15 or 20 yrs. Tractors allow farmers to work land in larger fields, many times without regard to how land lies. Also, dairy farming means pasturing the herd on meadows after the hay has been removed, leaving very little plant material to be plowed down."[64] He and other extension agents in the region pushed contour plowing and strip cropping. Farmers did begin to adopt the practice in this period.

Contour plowing's impact was to replace those small, irregular square-ish fields with long, carefully plotted, undulating strips. The principle is to control soil erosion on sloping surfaces by plowing along contour lines; and by planting strips of crops that alternately absorb runoff and let it pass through. Some fencing and treelines were eliminated. Shifting rotations probably compounded this effect, because when the traditional four-year rotation was replaced with more limited two-crop sequences, there was less need for multiple small fields and so large, long contour strips could be more easily installed.

Area east of Millville before contour plowing was common, Greenwood Township, Columbia County, 1939. Penn Pilot photo number aqr_105_38, Penn Pilot website, http://www.pennpilot.psu.edu/, accessed March 13,

The rise of strip cropping and contour plowing is mainly a post-1940 phenomenon in the North and West Branch. Even a cursory comparison of the 1939 and 1959 aerial images reveals that contour plowing and strip cropping entered the farming repertoire in a big way since the 1939 aerial photo was taken. Field consolidation is visible and individual sentinel trees are almost all gone, yet the continuities are also evident.

Woodlots

The Union County agricultural extension reports for 1932 have photos of a "locust and Red Pine Strip Planted 1932 to control Hillside Washing"; and also of a grove of pines planted for Christmas trees and timber in 1926.[65]

Aerial view, Burt DeWald Farm, Lycoming County, This photo nicely shows windbreaks, ornamental trees, and woodlots also, about 1950. Lycoming County Agricultural Extension Archives, Hughesville, PA.

Fencing

Where fencing was still needed, wood-and-wire was the general choice. Woven wire or barbed wire were the two main types. Barbed wire was cheaper, but more dangerous; woven wire gradually supplanted barbed wire, especially where hogs were raised. Sometimes a woven wire fence had one strand of barbed wire on the top.[66]

Woven wire fencing, treelines and ditches defining fields, Chapman Township, Snyder County, no date. Site 109-CH-001.

Huntingdon Mountain from Fleckenstin's Grove, c. 1940, Columbia County Historical Society, Photo #09-0113.

Pond

As elsewhere in the state, ponds were popular in the postwar period, owing to rising farm values (hence a greater need for fire protection), and the greater accessibility of earth moving equipment.

Farm Pond, James Nicholson Farm, Lycoming County, c. 1950. Lycoming County Agricultural Extension Archives.

Roads

During this period, the percentage of paved and widened roads increased.

Utility Poles

As the rural areas in the state became more completely electrified, utility poles became a more standard landscape feature.

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

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.[67]

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.[68] 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

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, that 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, that 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.

Registration Requirements Specific to the North and West Branch Susquehanna River Valleys Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region's chronological history.

To represent the period c1840-1860 ("Diversified Production on Highly Mechanized Farms"):

A **farmstead** should include, at a minimum, a four-over-four, five-bay, or three-bay farmhouse; a Pennsylvania barn; and at least two outbuildings relating to its prevalent township production profile, level of mechanization, and cultural patterns. For example, a Greenwood Township farm should have at least two of: corncrib, granary, hog house, (these first three can be integrated into a larger barn); butcher house, summer kitchen, spring house, machine shed. If the barn is a bank barn, it should have a machinery bay or some other accommodation for machinery. A **farm** should have surviving landscape features, which could include tree lines, woodlots, road and path locations. Any of these, if they survive, should carry additional weight. Labor patterns and cultural patterns should be represented as outlined in the discussion above under "General Considerations for Pennsylvania as a Whole." A **historic**

agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since individual properties which solely illustrate this early period are likely to be rare, districts with a concentration of such properties are also likely to be rare. It is very important to note that not only production patterns, but historic patterns of tenancy, labor, and culture should be clearly represented.

To represent the period 1860-1940 ("Diversified Production for Local Markets"):

A **farmstead** should retain a three-, four-, or five-bay house, either constructed or updated during the period; a Pennsylvania barn or three-gable barn. The barn could be multifunctional (see Narrative), or accompanied by outbuilding extensions. Outbuildings and extensions should illustrate high mechanization, and diversified production – so buildings for more than one enterprise (poultry raising, hog housing and processing, small scale dairying, corn storage, and so on) should be present. For a **farm** surviving landscape features could include tree lines, vegetable gardens, ornamental plantings, windbreaks, orchards, woodlots, road and path locations. Any of these, if they survive, should carry additional weight. Labor patterns and cultural patterns should be represented as outlined in the discussion above under "General Considerations for Pennsylvania as a Whole." A **historic agricultural district** should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, along transportation corridors where strong development took place during this period, there may be clusters of farms whose architecture and landscape elements were built during the period. Not every farmstead or farm in the district would need to possess all the registration requirements; but collectively they should clearly represent the period.

To represent the period 1940–1960 ("Fossil Fuel Powered Diversified Production"):

A **farmstead** should include a house that either was built during this era or predates it; an older barn with dairy and/or poultry alterations (see narrative for specifics); or a large barn (most likely a three-gable barn) that shows centralization and diversification, i.e. that has facilities for hogs, poultry, machine storage, and cattle under one roof or in a connected complex. Outbuildings and freestanding structures should include at least two of: corn crib, a machinery shed, a garage dating to the

period, a large (multistory, and/or footprint greater than say 10 X 15 feet) poultry house, brooder house. A milk house or silo is a plus, but not essential, because dairying was not important in most North/West Branch townships. For a **farm** there should be one or more surviving landscape features from the period, such as ornamental plantings, ponds, etc. Labor patterns and cultural patterns should be represented as outlined in the discussion above under "General Considerations for Pennsylvania as a Whole." A **historic agricultural district** should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, a cluster of farms on or near a road that was paved in the 1920s might have all undergone a building spurt during that time. Such a district should clearly show poultry and/or hog houses, milk houses, silos, and barn additions all built within a limited time period.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region's agricultural history:

Rather than list all the many ways in which change over time could be illustrated, below are some examples. A **farmstead** in this category might typically have a 19th century farmhouse; a 19th century barn with extensive alterations that could include a gable ell, enclosed forebay, alterations for dairying and/or poultry, and centralization of hog, poultry, and dairy production. Outbuildings could show a chronological range, but there should be at least three, and they should reflect agricultural shifts. Combinations might include a butcher house, smoke house, spring house, hog house, and summer kitchen; corn cribs, poultry houses, and root cellar; etc. Or perhaps there might be an early corncrib and a mid-twentieth century cylindrical one, showing the continued importance of corn as a feed and cash crop. Or, a machinery bay integrated into the barn, and a pole barn. The assemblage should be tied to typical production and ethnic patterns for this agricultural region, i.e. the livestock enterprises most prominent would be hogs and chickens, not dairy; and therefore complementary feed buildings would be corncribs, not silos. See Narrative for trends in production.

A **farm**, to be eligible, would need to include all the requirements of the farmstead, plus significant acreage; and intact or remnant landscape features from the period of

significance. Thus for example, contour strips that date from the 1930s would be a significant surviving landscape feature, as would treelines, woodlots, crop fields, pasture, meadow, paths, fencing, and the like.

A **historic agricultural district** would include a number of farms sharing prominent characteristics of the region, and which were contiguous and connected by historic roads, pathways, or waterways.

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.

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".[69]

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 ...".[70] 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.[71] 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).

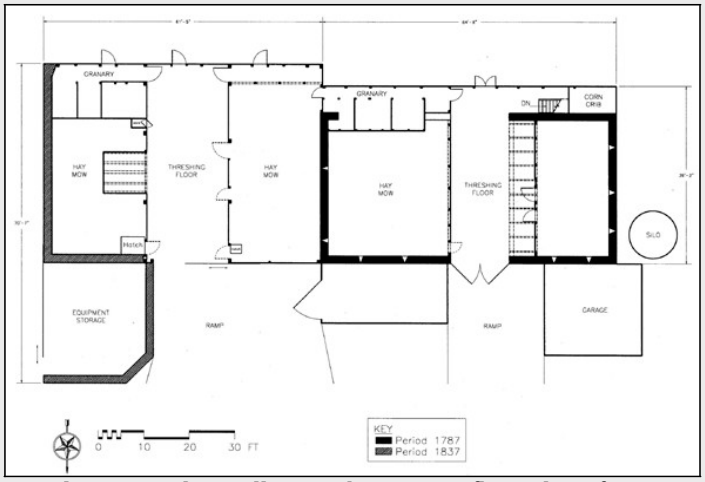
Ornament on Hodge Barn, Centre County

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 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.


Plank Barn, Cumberland County, 1853

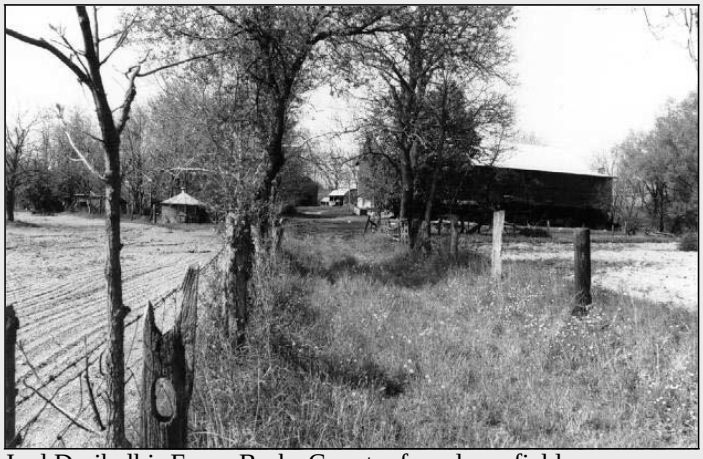
Example 4. Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century. Most examples of architectural significance will likely be larger buildings such as barns, but this smokehouse (in Lebanon County) is an example of a smaller building which might qualify because of its masonry (which qualifies 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 20th 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.

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.

Bibliography for Property Types and Registration Requirements, Criterion D, Archaeology

Bailey, Daniel N., David L. Weinberg, and John W. Lawrence
2004 From Log House to Brick Mansion, Continuity and Contradiction in Quaker Life and Thought: Data Recovery at the Hoopes House Site, 36CH0732. Report on file, Pennsylvania Historical and Museum Commission, Harrisburg, PA.

Beaudry, Mary C.1986 "The Archaeology of Historical Land Use in Massachusetts." *Historical Archaeology* 20(2):38-46. 2001-2002 "Trying to Think Progressively about Nineteenth-Century Farms." *Northeast Historical Archaeology* 30-31:129-142.

Bowen, Joanne
1998 "To Market, To Market: Animal Husbandry in New England." *Historical Archaeology* 32(3):137-152.

Cabak, Melanie A., Mark D. Groover, and Mary M. Inkrot
1999 "Rural Modernization During the Recent Past: Farmstead Archaeology in the Aiken Plateau." *Historical Archaeology* 33(4):19-43.

Catts, Wade P.
2001-2002 "Research Questions for the Archaeology of Rural Places: Experiences from the Middle Atlantic." *Northeast Historical Archaeology* 30-31: 143-154.

Friedlander, Amy
1991 "House and Barn; The Wealth of Farms, 1795-1815." *Historical Archaeology* 25(2):15-29.

Garman, James C., Paul A. Russo, Stephen A. Morozowski, and Michael A. Volmar
1997 "'This Great Wild Tract': Henry David Thoreau, Native American, and the Archaeology of Estabrook Woods." *Historical Archaeology* 31(4):59-80.

Garrison, Ervan G.
1996 "Archaeogeophysical and Geochemical Studies at George Washington Carver National Monument, Diamond, Missouri." *Historical Archaeology* 30(2):22-40.

McGuire, Randall H. and Mark Walker

1999 “Class Confrontations in Archaeology.” *Historical Archaeology* 33(1):159-183.

Miller, George L.
1980 “Classification and Economic Scaling of 19th Century Ceramics.” *Historical Archaeology* 14:1-40.

Price, Cynthia R.
1985 “Patterns of Cultural Behavior and Intra-Site Distributions of Faunal Remains at the Widow Harris Site.” *Historical Archaeology* 19(2):40-56.

Rotman, Deborah L. and Michael S. Nassaney
1997 “Class, Gender, and the Built Environment: Deriving Social Relations from Cultural Landscapes in Southwest Michigan.” *Historical Archaeology* 31(2):42- 62.

Scharfenberger, Gerard P. and Richard F. Veit
2001-2002 “Rethinking the *Mengkom* Mixing Bowl: Salvage Archaeology at the Johannes Luyster House, a Dutch-American Farm.” *Northeast Historical Archaeology* 30-31: 53-72.

Stewart-Abernathy, Leslie C., and Barbara L. Ruff 1989 “A Good Man in Israel: Zooarchaeology and Assimilation in Antebellum Washington, Arkansas.” *Historical Archaeology* 23(2):96-112.

Stine, Linda F. 1990 “Social Inequality and Turn-of-the-Century Farmsteads; Issues of Class, Status, Ethnicity, and Race.” *Historical Archaeology* 24(4):37-49.

Whittaker, William E.
1999 “Production of Animal Commodities at Plum Grove, Iowa City.” *Historical Archaeology* 33(4):44-57.

Wurst, Lou Ann and Robert K. Fitts
1999 “Introduction: Why Confront Class?” *Historical Archaeology* 33(1):1-6.

Wurst, Lou Ann
1999 “Internalizing Class in Historical Archaeology.” *Historical Archaeology* 33(1): 7-21.

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."[72]

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."[73]

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"[74] 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."[75] 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."[76] 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.

Bibliography

Note: this bibliography is specifically for North and West Branch Susquehanna River Valleys. A more extensive general bibliography is available on the Pennsylvania Agricultural History Project website.

1921 Business Directory of Mandata, Herndon, and Surrounding Area. USGenWeb Archives. URL:ftp://ftp.rootsweb.com/pub/usgenweb/pa/northumberland/xmisc/1921mand.tx.

Andrzejewski, Anna. Email to Sally McMurry, 1 April 1998.

Maps, Engravings and Articles from the 1876 Atlas of Columbia and Montour Counties, Pennsylvania, from Recent and Actual Surveys and Records Under the Superintendence of G. H. Walker and C. F. Jewett. F. W. Beers and Co: New York, 1876.

Bacon, S. Rankin. *Soil Survey, Montour and Northumberland Counties, Pennsylvania*. United States Department of Agriculture, Soil Conservation Service. Washington, D.C., 1955.

Bacon, S. Rankin. *Soil Survey of Union County, Pennsylvania*. United States Department of Agriculture, Agricultural Research Administration, Bureau of Plant Industry, Soils, and Agricultural Engineering. Washington, D.C., 1946.

Bailey, Dana H. and John R. Haswell. "Milk Houses." Pennsylvania State College Agricultural Extension Circular # 139, April 1931.

Barton, Edwin M. *History of Columbia County, Pennsylvania*. Sponsored by the Columbia County Historical Society and Commissioners of Columbia County, 1958.

Battle, J. H. *History of Columbia and Montour Counties, Pennsylvania*. Chicago: A. Warner & Co., 1887.

Beers, D. G. *Atlas of Union and Snyder Counties, Pennsylvania*. Philadelphia: Pomeroy & Beers, 1868.

Bell, Herbert C. *History of Northumberland County*. Chicago: Brown and Runk, 1891.

Blake, Jody, and Jeannette Lasansky. *Rural Delivery: Real Photo Postcards from Central Pennsylvania 1905–1935*. Lewisburg, PA: Union County Historical Society, 1996.

Boyer, Walter, Albert F. Buffington, and Don Yoder, eds. *Songs Along the Mahontongo: Pennsylvania Dutch Folk Songs*. Hatboro, Pennsylvania: Folklore Associates, 1951.

Bowen, Eli. *Pictorial Sketch-Book of Pennsylvania, or, Its Scenery, Internal Improvements, Resources, and Agriculture*. Philadelphia: W.P. Hazard, 1852.

Brewer, Priscilla. *From Fireplace to Cookstove: Technology and the Domestic Ideal in America*. Syracuse: Syracuse University Press, 2000.

Burrowes, Thomas H. *State-Book of Pennsylvania*. Philadelphia: Uriah Hunt & Son, 1846.

Census of the United States, Population Schedule, Pennsylvania, 1870, 1880, 1920. United States Bureau of the Census, Washington, D.C.: National Archives and Records Administration.

Charles, T. B. "Poultry Housing for Pennsylvania." Pennsylvania State College Agricultural Extension Circular # 91, February 1922.

Chen, K. I., and Jerome Pasto. "Facts on a Century of Agriculture, 1839–1950." Pennsylvania Agricultural Extension Bulletin # 587, January 1955. Includes county tables.

Columbia County Historical Society Photo Archives, Bloomsburg, Pennsylvania.

Columbia-Luzerne Farm and Home News.

Combination atlas map of Dauphin County, Pennsylvania/ compiled, drawn and published from personal examinations and surveys by Everts & Stewart. Philadelphia : Everts & Stewart, 1875.

Commemorative biographical encyclopedia of Dauphin County, Pennsylvania. Chambersburg, Pa. : J. M. Runk & company, 1896.

Commemorative biographical encyclopedia of the Juniata valley, comprising the counties of Huntingdon, Mifflin, Juniata and Perry, Pennsylvania : Containing sketches of prominent and representative citizens and many of the early settlers ... Chambersburg, Pa. : J. M. Runk & co., 1897.

Creasy, Mrs. Wilson E. "Excerpts From the Diary of a Farmer's Wife, Mrs. Wilson E. Creasy, 1905-06." Columbia County Historical and Genealogical Society. Accessed at http://www.colcohist-gensoc.org/Essays/creasydiary.htm.

The Dauphin County historical review. Harrisburg, Pa. : Historical Society of Dauphin County.

Dennis, W.V. "Organizations Affecting Farm Youth in Locust Township, Columbia County." Pennsylvania State College Agricultural Experiment Station Bulletin # 265, June 1931.

Donehoo, George Patterson. *Harrisburg and Dauphin County : a sketch of the history for the past twenty-five years, 1900-1925*.Dayton, Ohio : National Historical Association, 1925.

Dossin, C.O. "Hatching Egg Production in Pennsylvania." Pennsylvania State College

Agricultural Extension Circular # 361, April 1950.

Dunkelberger, George Franklin. *The Story of Snyder County from its Earliest Times to the Present Day*. Selinsgrove, Pennsylvania: Snyder County Historical Society, 1948.

Duy, Albert W. *Atlas and Directory of the Town of Bloomsburg, Columbia County, Pennsylvania, 1769–1951*. Bloomsburg, Pennsylvania: Town-Fax Publishers, 1952.

Eaton, Rebecca. *A Geography of Pennsylvania*. Philadelphia: Key and Biddle, 1835.

Egle, William Henry. *Centenary memorial of the erection of the county of Dauphin and the founding of the city of Harrisburg.* Harrisburg, Pa. : Telegraph printing house, 1886.

Egle, William Henry. History of the counties of Dauphin and Lebanon, in the Commonwealth of Pennsylvania. Philadelphia : Everts & Peck, 1883.

Farm Journal, Various Issues.

Farm Census Returns, 1927 Triennial Census of Agriculture, Pennsylvania. Department of Agriculture, Bureau of Plant Industry, Division of Crop Reporting. Pennsylvania State Archives, RG 1, Series #1.12. These are now available in digital form on the Pennsylvania Agricultural History Project website.

Freeze, John G. *A History of Columbia County: From its Earliest Times*. Bloomsburg, Pennsylvania: Elwell & Bittenbender, 1883.

Glassie, Henry. "Eighteenth-Century Cultural Process in Delaware Valley Folk Pennsylvania." *Winterthur Portfolio*, VII (1972): 29-57.

Gordon, Thomas Francis. *A Gazetteer of the State of Pennsylvania*. Philadelphia: T. Belknap, 1832.

Historic American Buildings Survey Photo Archive. Accessed at http://memory.loc.gov/ammem/collections/habs_haer/index.html

Hain, Harry Harrison. *History of Perry County, Pennsylvania*. Harrisburg, Pa. : Hain-Moore company, 1922.

Hanford, George. *Directory of Columbia and Montour Counties, Pennsylvania: with Map*. Elmira, New York: G. Hanford, 1901.

Heutchy, Alvin E. "The Rural Electrification Administration and its Work in Pennsylvania." M.A. Thesis, Pennsylvania State College, Political Science, 1938.

Historic Site Inventory for Snyder County. Middleburg, Pennsylvania: Snyder County Planning Commission, 1977.

History of that Part of the Susquehanna and Juniata Valleys: Embraced in the Counties of Mifflin, Juniata, Perry, Union and Snyder, in the Commonwealth of Pennsylvania. Philadelphia: Everts, Peck & Richards, 1886.

Historic Preservation Plan of Union County, Pennsylvania. New York: Willis Monie Books, 1978.

Historical and Biographical Annals of Columbia and Montour Counties, Pennsylvania. Chicago: J.H. Beers & Co., 1915.

Hornberger, Mark. "The Spatial Distribution of Ethnic Groups in Pennsylvania 1800–1880: A Geographic Interpretation." Ph.D. diss., Pennsylvania State University, Geography, 1974.

Howard, Ivy. "Crazy Patch Fields." *Farm Journal*, March 1931.

Hutchinson, C. H. *The chronicles of Middletown : containing a compilation of facts, biographical sketches, reminiscences, anecdotes, &c. ;* [n.p. : C.H. Hutchinson], 1906

Kauffman, H. H. and R. R. Murphy. "Poultry Houses for Pennsylvania." Pennsylvania State College Agricultural Extension Circular # 358, February 1950.

Kelker, Luther Reily. *History of Dauphin County, Pennsylvania : with genealogical memoirs.* New York : Lewis Publishing Co., 1907.

Kennard, D. C. "A New Deal For Chickens." *Farm Journal*, July 1933.

Kennard, D.C. "Revolution in Hen-Coops." *Farm Journal*, March 1932.

Koenig, Nathan. "Henhouses from Left-Overs." *Farm Journal*, June 1930.

Lewis, Walter Jolly. "An Argument for the Establishment of Extension Service in Montour County." M.S. Thesis, Rural Education, Pennsylvania State College, 1936, Chapter IV.

Long, Theodore K. *Tales of the Cocolamus*. New Bloomfield, Pa. : Carson Long Institute, 1936.

Lycoming County Agricultural Extension Archives, Hughesville, Pennsylvania.

Lycoming County Historical Society, Photo Archives, Williamsport, Pennsylvania.

Lycoming County Unit of the Pennsylvania Writers' Project of the Work Projects. *Picture of Lycoming County*, Williamsport, Pennsylvania: Commissioners of Lycoming Co., 1939.

Mather, Eugene Cotton, and John Fraser Hart. "Fences and Farms." *Geographical Review* 22, No. 2 (April 1954): 201–223.

McMurry, Sally. *From Sugar Camp to Star Barn: Rural Life and Landscape in a Southwestern Pennsylvania Community*. University Park: The Pennsylvania State University Press, 2001.

Morgan, George Hallenbrooke. *Centennial : The settlement, formation and progress of Dauphen [sic] County, Pennsylvania*... Harrisburg, Pa. : Telegraph steam book and job printing house, 1877.

Morley, L. W. "Building the Farm Dairy House." Pennsylvania State College Agricultural Extension Circular # 107, December 1925.

Morse, H. N. *The Country Church in Industrial Zones: The Effects of Industrialism upon the Church Life of Adjacent Rural Areas as Illustrated by Two Typical Counties*. New York: G.H. Doran Co., 1922.

Murphy, R. R. and John Vandervort. "A Practical Brooder House." Pennsylvania State College Agricultural Extension Circular # 242, November 1942.

National Stockman and Farmer, May 26, 1898; April 4, 1901; January 2, 1902.

Neth, Mary. *Preserving the Family Farm: Women, Community, and the Foundations of Agribusiness in the Midwest, 1900–1940*. Baltimore: Johns Hopkins University Press, 1995.

Nichols, Beach. *Atlas of Perry, Juniata, and Mifflin Counties, Pennsylvania, from actual surveys*. Philadelphia : Pomeroy, Whitman, 1877.

"New Frameless Building." *Farm Journal*, April 1959.

Nolt, Steven. *Foreigners in Their Own Land: the Pennsylvania Germans in the Early Republic*. University Park, PA: Pennsylvania State University Press, 2002.

Nonpopulation Census Schedules of Pennsylvania, Agriculture, 1850, 1860, 1870, 1880. United States Census Office, Washington, D.C.: National Archives and Records Administration, 1970 (text-fiche). The 1850 and 1880 schedules are now available on the Pennsylvania Agricultural History Project website.

Nonpopulation Census Schedules of Pennsylvania, Industry, 1870, 1880, 1920. United States Census Office, Washington, D.C.: National Archives and Records Administration, 1970 (text-fiche).

Northumberland County History: Historic Site Inventory. Prepared by the Northumberland County Planning Commission. Sunbury, Pennsylvania: The Commission, 1976.

Northumberland County Tax Lists. USGenWeb Archives. URL:ftp://fto.rootsweb.com/pub/usgenweb/pa/northumberland/taxlists/1808miff.txt. Accessed on 2 June 2004.

Northumberland County Preservation Plan. Prepared by the Northumberland County Planning Commission. Sunbury, Pennsylvania: The Commission, 1978.

Notes and queries, historical, biographical, and genealogical. (Dauphin County periodical, edited by W. H. Egle beginning 1884.)

Penn Pilot (Online Library of Historical Aerial Photography Maintained by the Commonwealth of Pennsylvania's Geological Survey and State Archives. At http://www.dcnr.state.pa.us/topogeo/library/aerials.aspx).

Pennsylvania Farm Placement Program, 1952, 1958. Pennsylvania Bureau of Employment Security.

Pennsylvania State Board of Agriculture. *Annual Report,* 1877, 1882.

Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections. Note: these archives are currently being digitized, but the process is incomplete. The manuscripts include agricultural extension and home economics annual reports, photographs, and other materials. For this context, the collections for Columbia, Snyder, Union, Montour, Northumberland, Dauphin, Perry, and Lycoming Counties were consulted from the date extension service began in the county through 1960.

Pennsylvania State College Agricultural Extension Circulars. #77, January 1919, #107, December 1925, #358, February 1950, #361, April 1950.

Pennsylvania State College Department of Agricultural Economics and Rural Sociology, Community Studies. Pennsylvania State University Libraries Special Collections, University Park.

Pennsylvania Department of Agriculture. *Pennsylvania Agricultural Statistics 1866–1950*. Compiled under direction of E.L. Gasteiger and D. O. Boster. Harrisburg: Pennsylvania Federal-State Crop Reporting Service, 1954.

Pennsylvania Farmer. Published in Philadelphia and Pittsburgh 1917-2002 absorbed by *American Agriculturist* in 2002.

Perkins, B.G. "New---A Shed for 4-Row Equipment." *Farm Journal*, April 1957.

Photographic Record, Benton and Columbia Counties. URL:www.lowerluzernecounty.com/schools/benton/benton-1907.htm.

Pillsbury, Richard. "The Pennsylvania Culture Area Reappraised." *North American Culture* (1987): 37–54.

Platt, C.S. "Battery Brooding." *Farm Journal,* January 1930.

Platt, C.S. "Four Weeks in Batteries." *Farm Journal,* December 1930.

"Pole-type Buildings…From STEEL." *Farm Journal*, October 1957.

Rauhauser, Barry. "The Development of the Pennsylvania Farmhouse Type in Manchester Township, York County, Pennsylvania." M.A. Thesis, University of Delaware, 2002.

Roe, Keith E. *Corncribs in History, Folklife, and Architecture*. Ames: Iowa State University Press, 1988.

Rupp, I. D. *History and Topography of Northumberland, Huntington, Mifflin, Centre, Union, Columbia, Juniata, and Clinton Counties, Pennsylvania*. Lancaster, Pennsylvania: G. Hill, 1847.

Rupp, I. Daniel. *The history and topography of Dauphin, Cumberland, Franklin, Bedford, Adams, and Perry counties*. Lancaster city, Pa. : G. Hills, 1846.

Saylor, Roger B. "An Economic Survey of Northumberland County, Pennsylvania." Bulletin # 1, Pennsylvania State College Bureau of Business Research County Study # 1, 1949.

Scott, Joseph. *A Geographical Description of Pennsylvania*. Philadelphia: Printed by Robert Cochran, 1806.

Snyder, Charles M. *Union County Pennsylvania: a Celebration of History*. Lewisburg, Pennsylvania: Union County Historical Society, 2000.

Stoctay, G. G. *Dauphin County: elements toward a 20th century pictorial history*. Harrisburg, Pa., 1971.

Tomhave, W. H., and H. H. Havner. "Swine Feeding and Management." Pennsylvania State College Agricultural Extension Circular # 77, January 1919.

Trego, Charles. *A Geography of Pennsylvania*… Philadelphia: E.C. Biddle, 1843.

Trewartha, Glenn T. "Some Regional Characteristics of American Farmsteads." *Annals of the Association of American Geographers* 38, No. 3 (September 1948): 169–225.

Union-Snyder Joint Planning Commission. *Technical Report*, 1973. This includes a *Historic Site Survey* and a report on local history.

United States Department of Agriculture. *Farm Building and Equipment Plans and Information Series*. Series Number 550-551, 633-4-5, 759-60, 771-2, 909, 1333-4-5, 1336, 1337-8, 1339-40, 1341, 1342-3, 1345-57, and 1521.

United States Patent Office *Annual Reports*, 1844–1863. Washington, D.C.: Government Printing Office. The Patent Office published agricultural data before the Department of Agriculture was formed in 1863.

Watts, Ralph L. *Rural Pennsylvania*. New York: The Macmillan Co., 1925.

Wolf, George D. *The Fair Play Settlers of the West Branch Valley, 1769–1784: A Study in Frontier Ethnography*. Harrisburg: Pennsylvania Historical and Museum Commission, 1969.

Wright, Silas. *History of Perry county, in Pennsylvania, from the earliest settlement to the present time*. Lancaster, Pa. : Wylie & Griest, 1873.

Zahorski, H. "Write Up." Pennsylvania State College Department of Agricultural Economics and Rural Sociology Community Studies, Box # AX/PSUA 02493.

Endnotes

[1] *Historic Preservation Plan of Union County, Pennsylvania* (New York: Willis Monie Books, 1978) establishes that Lewisburg was linked by canal with Milton and the PA mainline by 1833, and that by the 1880s it was linked by rail to the east and west.
[2] *Technical Report* 2, Union-Snyder Joint Planning Commission, 1973, 8.
[3] Note that different scholars mean different things by the term "four-over-four." Richard Pillsbury, in "The Pennsylvania Culture Area Reappraised" (in *North American Culture*, 1987: 37–54), differentiates between what he calls the "Continental" four-over-four, which is a four-bay house supposedly derived from the "Continental" three-room house, and the "Pennsylvanian four-over-four," which is a five bay-house with central door and central hall, and four rooms on each floor. Barry Rauhauser, on the other hand, in "The Development of the Pennsylvania Farmhouse Type in Manchester Township, York County, Pennsylvania," (M.A. Thesis, University of Delaware, 2002), uses the term "four-over-four" to refer to the number of exterior bays. Henry Glassie, in "Eighteenth-Century Cultural Process in Delaware Valley Folk Building" (in *Winterthur Portfolio*, VII, Charlottesville: University Press of Virginia for the Henry Francis du Pont Winterthur Museum, 1972: 29–57), discusses the appearance of the "Pennsylvania farmhouse."
[4] See Sally McMurry, *From Sugar Camp to Star Barn* (University Park: Pennsylvania State University Press, 2001), 16, 138-9.
[5] Steven Nolt, *Foreigners in Their Own Land: The Pennsylvania Germans in the Early Republic* (University Park: Pennsylvania State University Press, 2002), 3.
[6] George Franklin Dunkelberger, *The Story of Snyder County from its Earliest Days to the Present Day* (Selinsgrove, PA: Snyder County Historical Society, 1948), 292.
[7] Dunkelberger, 295.
[8] *Census of the United States, Population Schedule, Pennsylvania*, and *Industry Schedule, Pennsylvania*, 1870, 1880, 1920.
[9] *Census of the United States, Population Schedule, Pennsylvania*, and *Industry Schedule, Pennsylvania*, 1870, 1880, 1920.
[10] *National Stockman and Farmer*, May 26, 1898, 224.
[11] However, the Union County extension agent says in 1920: "poultry keeping on the average farm in Union County is considered a side issue. In most cases the farmer's wife or children care for them in a crude way and as a result they are not very profitable." The agents consistently wrote about "poultrymen," but photos of their demonstrations always show substantial attendance by women, and frequently women made the best profit records in the poultry trials. Union County Agricultural Extension Agent Narrative Report, 1920 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[12] *Annual Report* (1882), Pennsylvania State Board of Agriculture, 375.
[13] *Annual Report* (1882), Pennsylvania State Board of Agriculture, 375.
[14] *Historical and Biographical Annals of Columbia and Montour Counties, Pennsylvania* (Chicago: J. H. Beers & Co., 1915), Chapter IV, 28
[15] *Historical and Biographical Annals of Columbia and Montour Counties, Pennsylvania* (Chicago: J. H. Beers & Co., 1915), Chapter IV, 28; *National Stockman and Farmer*, Volume 25, Part 2, January 2, 1902, 1041.

[16] Snyder County Agricultural Extension Agent Narrative Report, 1927, 1933 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[17]Union County Agricultural Extension Agent Narrative Report, 1920 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[18] *Historical and Biographical Annals*, Chapter IV, 30.
[19] See the photos in Charles M. Snyder, *Union County Pennsylvania: a Celebration of History* (Lewisburg, PA: Union County Historical Society, 2000), 39.
[20] All of these quotes are from "Excerpts from the Diary of a Farmer's Wife, Mrs. Wilson E. Creasy, 1905–06." The diary is part of the Columbia County Historical & Genealogical Society's holdings. Accessed from their website, http://www.colcohist-gensoc.org/Essays/creasydiary.htm, 7 July 2004.
[21] *National Stockman and Farmer* April 4, 1901.
[22] Snyder, 40. Note: The evidence for this is uncertain. The only year for which published county level statistics are available in this period is 1900, and these show that Montour paid more than average per farm for labor in 1900; Northumberland almost exactly the average; and Columbia well below average. So there is no discernible pattern there. The Pennsylvania Board of Agriculture annual reports on wages for the late nineteenth century show that in these three counties farm wages were at or below average for the state—suggesting there was not that much competition if one assumes that wages would rise if workers were in demand.
[23] *Songs Along the Mahontongo: Pennsylvania Dutch Folk Songs*, gathered and edited by Walter E. Boyer, Albert F. Buffington and Don Yoder (Hatboro, PA: Folklore Associates, 1951); Mark Hornberger, "The Spatial Distribution of Ethnic Groups in Pennsylvania, 1800–1880: A Geographic Interpretation" (Ph.D. diss., Pennsylvania State University, 1974).
[24] H. Zahorski, "Write Up," Pennsylvania State College Department of Agricultural Economics and Rural Sociology Community Studies, Box # AX/PSUA 02493.
[25] H. N. Morse, *The Country Church in Industrial Zones: The Effects of Industrialism upon the Church Life of Adjacent Rural Areas as Illustrated by Two Typical Counties* (New York: G.H. Doran Co., 1922), 31.
[26] Pennsylvania State College Department of Agricultural Economics and Rural Sociology Community Studies, Write-up, Box # 02493, 1930. The individual 1927 census schedules and local tax returns might yield information on ethnic patterns.
[27] Besides the examples depicted here, note the following: items from the Columbia County Historical Society photo archives: a late 19th century photo (# 02-1411) shows a stone house with six bays, more than one door, end chimneys, porch extending across front. # 04-0791 shows another multi-bay house with center chimney, hard to make out any other features except that it is two bays deep. The same goes for # 09-0005, which is in Madison Township, which is oddly configured. # 30-3519 shows a two-bay-deep house with rear extension.
[28] Maps, Engravings and Articles from the 1876 *Atlas of Columbia and Montour Counties, Pennsylvania, from Recent and Actual Surveys and Records Under the Superintendence of G. H. Walker and C. F. Jewett*, (F. W. Beers and Co: New York, 1876).
[29] Note that in all three of these, the total barn adds up to something a bit short of a full-blown "three gable" barn; the extensions are smaller, not integral, sometimes below the

main roof level, almost different in scale from the main barn. Also note that some Columbia County barns seem to have gable end additions to the main block (i.e., not an ell but a continuation on the gable side) that are set back from the main barn. Photo # 30-0072 [from the Columbia Co. photo archives] shows a standard Pennsylvania barn with stone foundation and worm fence enclosing yard. #3-30-0085 [from the Columbia Co. photo archives] shows a Pennsylvania Barn with center gable roof.

[30] Anna Andrzejewski, email to Sally McMurry, 1 April 1998.

[31] We do not know yet if there was a retail function to these spaces.

[32] Jerry Clouse, personal communication, summer 2005.

[33] For a nice photo of butter making, taken 6 September 1897, see Snyder, 38; also Jody Blake and Jeannette Lasansky, *Rural Delivery: Real Photo Postcards from Central Pennsylvania 1905–1935* (Lewisburg, PA: Union County Historical Society, 1996), 119.

[34] See the drive-through machine shed in Columbia County Historical Society photo archives # 02-1416.

[35] 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).

[36] Priscilla Brewer, *From Fireplace to Cookstove: Technology and the Domestic Ideal in America* (Syracuse: Syracuse University Press, 2000).

[37] Keith Roe, *Corncribs in History, Folklife, and Architecture* (Ames: Iowa State University Press, 1988).

[38] Columbia County Historical Society photo archive # 04-0791 has three possible examples of hog houses, all of which appear to have tight first stories with a single door for access. # 30-0072 has two which may be hog houses, though it is hard to tell. For an example of a large hog house, see Pennsylvania State College Agricultural Extension Circular #77, January 1919.

[39] Union County Agricultural Extension Agent Narrative Report, 1923 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).

[40] United States Department of Agriculture, Farm Building and Equipment Plans and Information Series. Compiled by Lewis A. Jones and T. A. H. Miller under the Direction of S. H. McCrory. Series Number 550-551, 633-4-5, 759-60, 771-2, 909, 1333-4-5, 1336, 1337-8, 1339-40, 1341, 1342-3, 1345-57, and 1521 all show plans and specifications for milk houses. Penn State University Library. L. W. Morley, "Building the Farm Dairy House," Penn State College Agricultural Extension Service Circular # 107, December 1925, says an 8 by 8 house would "do for a dairy of 10 cows."

[41] Dunkelberger, 28

[42] *Annual Report* (1877), Pennsylvania State Board of Agriculture, 238.

[43] Mary Neth, *Preserving the Family Farm: Women, Community, and the Foundations of Agribusiness in the Midwest, 1900–1940* (Baltimore: Johns Hopkins University Press, 1995).

[44] Poultry production did not reach the high levels of the state's leading counties such as Chester and York. However, there was enough activity such that it was a mainstay of the farm economy, and its landscape manifestations were everywhere. Therefore, it is important in this region. Information about egg marketing is from the Agricultural Extension Archives for Columbia County, Penn State University Special Collections.

[45] Snyder County Agricultural Extension Agent Narrative Report, 1946 (The Pennsylvania State University Archives).
[46] Walter Jolly Lewis, "An Argument for the Establishment of Extension Service in Montour County" (M.S. thesis, Pennsylvania State College, 1936), Chapter IV.
[47] Lewis claims that Columbia County was apparently known for "production of dairy cattle for sale to out-of-county buyers" (Lewis, 39). However, no other evidence of this enterprise has been found in research.
[48] Snyder County Agricultural Extension Agent Narrative Report, 1938, 5; 1939, 15 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[49] Montour County Agricultural Extension Agent Narrative Report, 1941, 8 (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[50] *Pennsylvania Farm Placement Program*, Pennsylvania Bureau of Employment Security, 1952, page 1; *Pennsylvania Farm Placement Program*, 1958, map page 19.
[51] "Pole-Type Buildings … From STEEL," *Farm Journal*, October 1957. See also "New Frameless Building," *Farm Journal*, April 1959: 76.
[52] *Pennsylvania Farm Placement Program*, 1963, 17.
[53] For illustrations, see advertisements, *Farm Journal*, March 1922 and January 1922.
[54] C. S. Platt, "Battery Brooding," *Farm Journal*, January 1930: 22.
[55] D. Kennard, "A New Deal for Chickens," *Farm Journal*, July 1933, p 5.
[56] Platt, "Battery Brooding."
[57] 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, pp. 31-32. 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.
[58] The agricultural extension publications before 1950 do not seem to differentiate between houses for layers and broilers. The only difference that is mentioned (in Extension Circular # 358, 1950) is that a house of a given size can always accommodate more broilers/fryers than egg layers, presumably because less space is given over to nesting boxes and the like.
[59] See Circular # 361, 1950. This shows the pullets who will lay these eggs on a free range in which they are let out on Ladino or clover range, and have low gable-roof shelters and open air nesting boxes.
[60] Roe, 64. However, fieldwork suggests that people still built new corn cribs right into the 1970s and 1980s.
[61] B. G. Perkins, "New—A Shed for 4-Row equipment," *Farm Journal*, April 1957: 90.
[62] Union County Agricultural Extension Agent Report for 1928. (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[63] Ivy M. Howard, "Crazy Patch Fields," *Farm Journal,* August 1935, 26.
[64] Union County Agricultural Extension Agent Report, 1939. (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).

[65] Union County Agricultural Extension Agent Report, 1932, 1926. (Pennsylvania State College Agricultural Extension Archives/ The Pennsylvania State University Libraries Archives and Special Collections).
[66] Eugene Cotton Mather and John Fraser Hart, "Fences and Farms," *Geographical Review* 22, No. 2 (April 1954): 201–223.
[67]Note that while the *buildings* represent an identifiable cultural tradition, the *owners or occupants* may not have necessarily share 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.
[68] 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.
[69] NR Bulletin *How to Apply the National Register Criteria for Evaluation*, p 17.
[70] *Historic Farming Resources of Lancaster County*, MPDF, 1994.
[71] 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).
[72]. "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. 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.
[73] "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
[74]Ibid.
[75]Ibid.
[76]Ibid.