Agricultural Resources of Pennsylvania, c. 1700-1960

Southwestern Pennsylvania Diversified Agriculture and Sheep Raising, c. 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 twentieth 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,

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-twentieth 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

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 twentieth 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 twentieth 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.

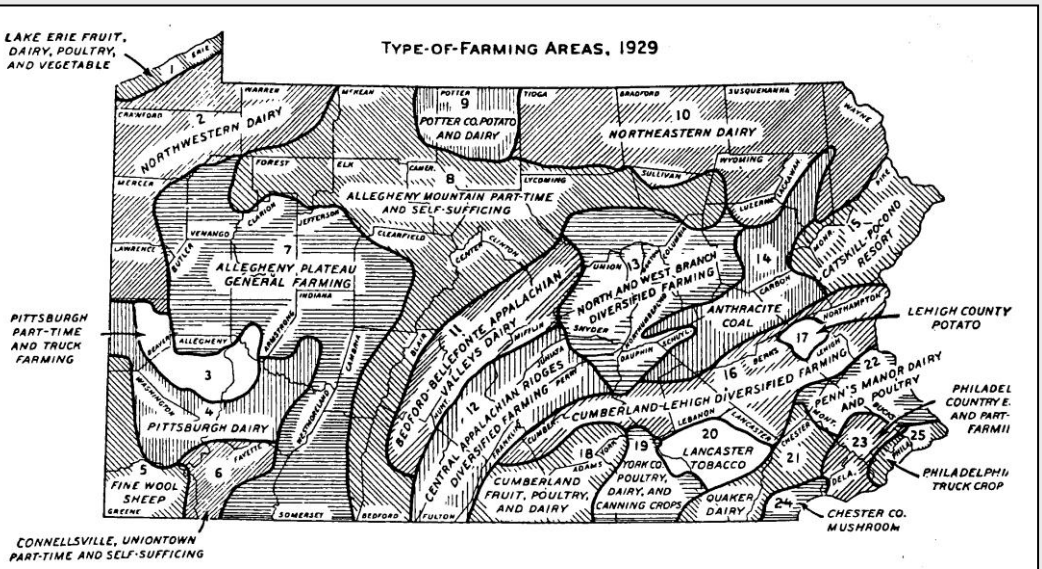
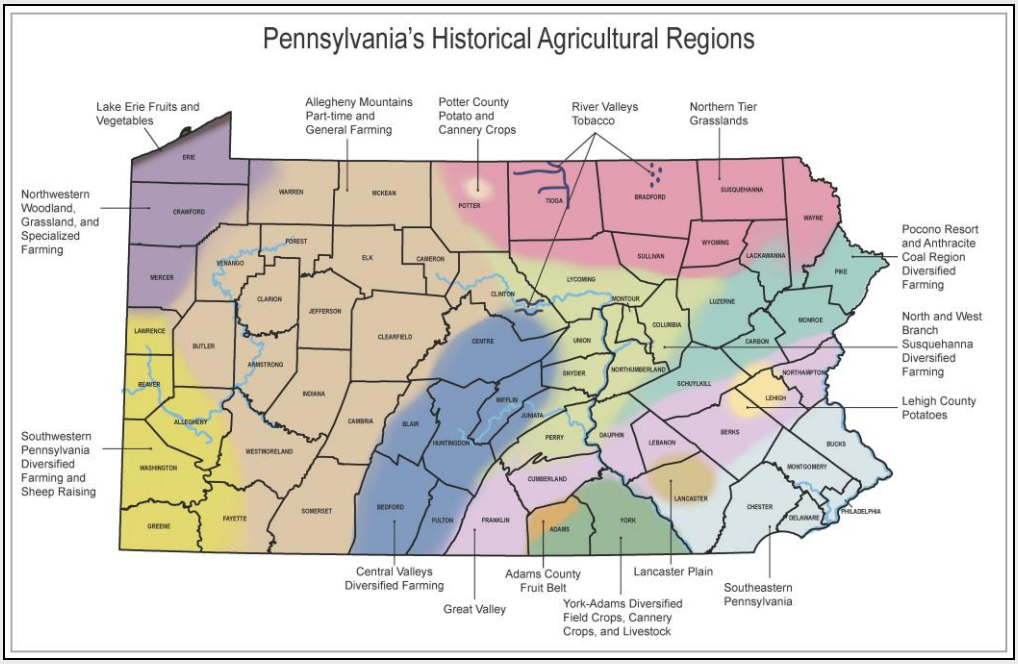


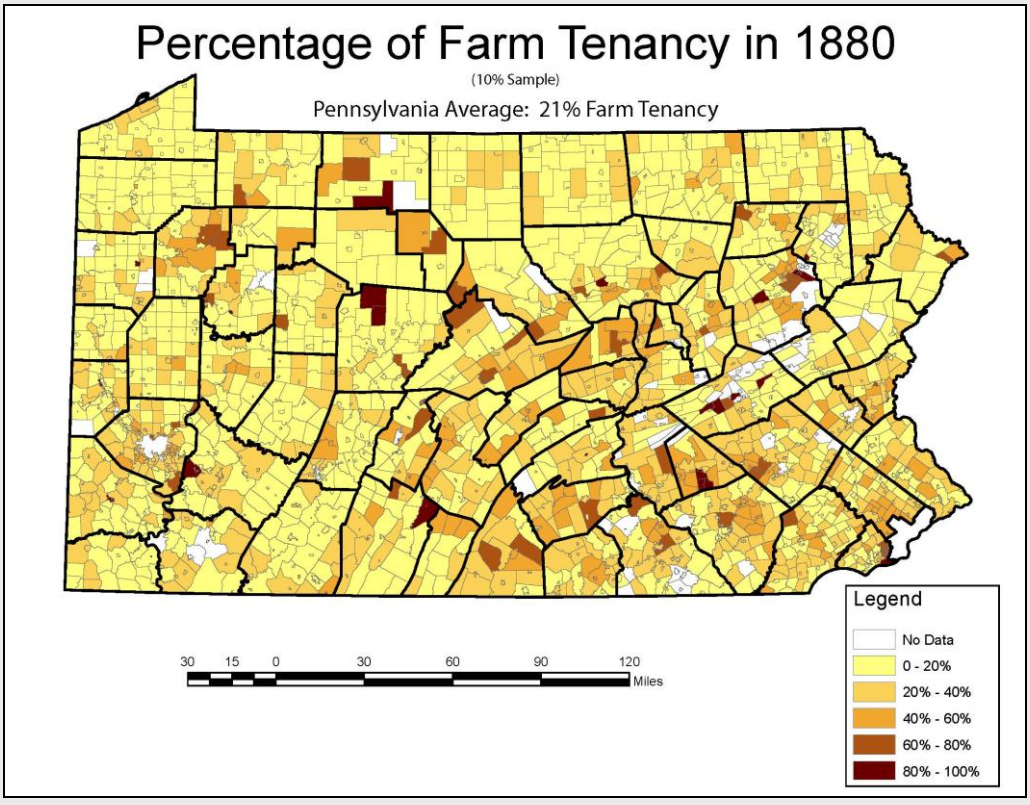
FIG. 35.—TYPE OF FARMING AREAS, 1929

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.



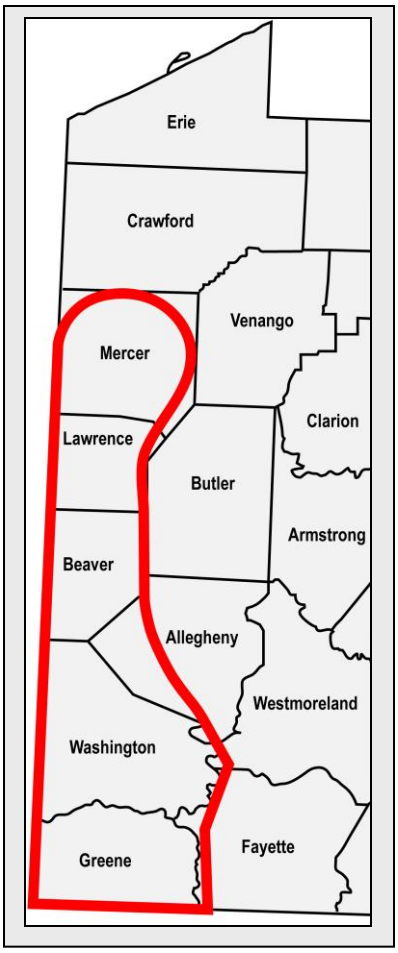
Historic Agricultural Regions of Pennsylvania.



Share Tenants as a percentage of all farmers, 1880.

Location

The Southwestern Pennsylvania Diversified Agriculture and Sheep Raising region encompasses all of two counties, and parts of several others, in the state's Southwestern corner. All of Washington and Greene Counties are included in the region, and they are by far the most important. Greene County, in the extreme Southwest, borders on West Virginia and Ohio; to its immediate north, Washington County shares a border with Ohio on the west and Beaver and Allegheny Counties to the north. Fayette County shares most of the region's eastern border. Portions of Allegheny, Beaver, Mercer, and Lawrence also historically belonged to the region. Development in Allegheny and Beaver has effaced much of the farming history. In Mercer and Lawrence, however, the region's boundaries trace roughly an oval around the urbanized areas in each county's center. Mercer and Lawrence, though they share in the regional characteristics, are significantly less important than Washington and Greene, so they receive less attention here.



Climate, Soils, and Topography

The region is part of the un-glaciated portion of the Allegheny Plateau and is topographically extremely hilly, and deeply dissected in most places, with hills ranging between 1300 and 1450 feet in elevation, rising about 300-400 feet above the valleys below. Numerous short streams drain to the Monongahela on the region's eastern border.[1] Greene County is more hilly than the other counties. Soils are alfisols with sandstone, shale, and limestone as the parent rock.[2] Their agricultural capacity is modest. The Pittsburgh coal seam underlies much of the region, and there are also oil and natural gas deposits. Over time, erosion has compromised agricultural potential.

The climate zone is classified as “humid continental warm summer.” The region receives about 40 inches of precipitation annually, most of it in the form of rain. The growing season ranges from 150 to 175 days.[3]

Historical Farming System

1830-1850: Diversified Farming and the Rise of Sheep Raising

Products, 1830-1850

The periodization for this narrative begins at the point when a well settled rural economy had become established. Sources from the late 1820s to mid-century indicate that the region's agriculture was highly diversified. A highly varied mix of cultivated crops (corn, wheat, oats, rye, buckwheat, hay), along with an ever expanding proportion of pasture land, supported an emerging system of stock raising and droving. Geographer Charles Trego enumerated among Washington County's products "wool, wheat, corn, oats, flour, horses, hogs, cattle, sheep, & c." In Greene County, wheat was the main agricultural product, mainly ground into flour before market, but also converted to whiskey; another geographer wrote that "large quantities of flour and whiskey" were sent to Pittsburgh and then to New Orleans." A good bit of the grain crop went to feeding stock, "of which a

large amount, particularly of hogs and cattle, is raised and driven eastward for sale." Baltimore and eastern Pennsylvania were principal destinations. There was a seasonal rhythm to droving: "After the spring droves are disposed of, then comes on the fat cattle, then horses, and then lean cattle again." Greene County also produced 100,000 pounds of maple sugar during this period, making good use of forest resources.[4]

The immense droves of animals coming out of the region were herded along several main routes. The National Road (or National Pike) swung up into Pennsylvania from Ohio, running through Washington, Pennsylvania toward Cumberland, Maryland and points east. A bit further north, the Forbes Road ran from Pittsburgh to Bedford and then eastward. Along these well travelled ways, wagons headed west with emigrants and their foundation herds; livestock trotted along in either direction. In general, smaller groups of breeding animals went west, and large droves of animals destined for slaughter went east. Sheep and cattle did better than hogs on the long haul, so they came to predominate. Two kinds of sheep were driven eastward: "stock sheep" (or “feeders”) for fattening in eastern Pennsylvania and the Potomac Valley; and mutton sheep (or “muttons”) sold directly to butchers in Baltimore and Philadelphia. Declines in grain prices stimulated droving: "In fact," remarked historian Edward Wentworth, "the driving east of fat livestock was the only means of marketing the western corn crop." (He inexplicably omitted whiskey from his calculations.) Between 1817 and 1820, droves increased considerably, reaching into the tens of thousands. Looking back on this heyday of droving, James Russell Lowell reminisced that the mixed herds learned a daily routine, with sheep becoming habituated to falling in behind the cattle. Long-distance droving lasted until railroads made the practice obsolete, around the mid nineteenth century.[5]

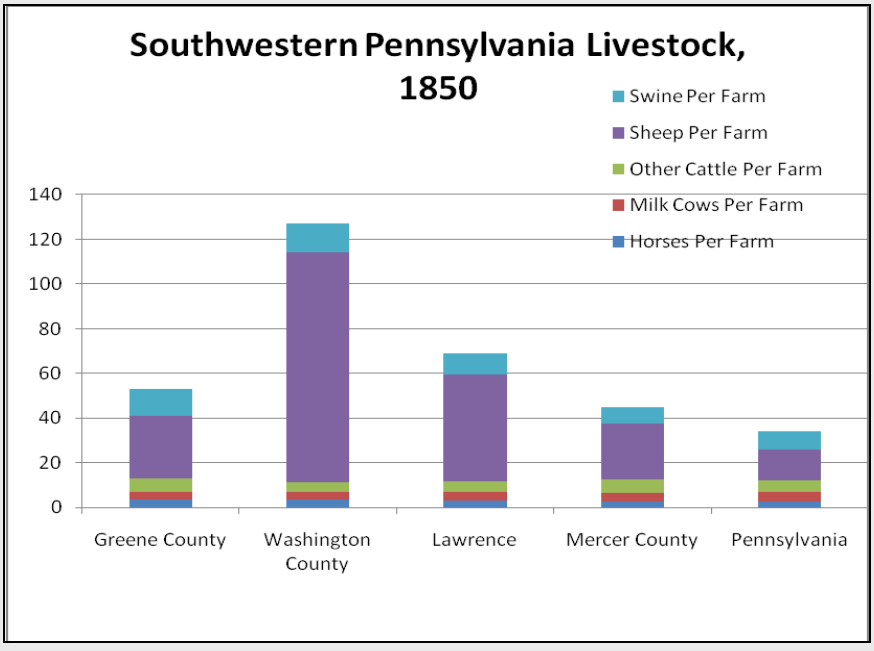
Hazard's Register in the late 1820s showed that the area was already achieving special notice for sheep raising. Writing from Washington County, a group of petitioners estimated that sheep numbers in the county were around 160,000, having rapidly increased in the last few years. They continued:

> one half are full and mixed blood Merinos—the other half coarse wooled or native sheep producing between four and five hundred thousand pounds of wool: about one half of this quantity is consumed within ourselves, (principally the

coarse wool) the balance is sold to neighboring manufacturers, or sent east of the mountains.[6]

By 1843 Washington County was among the foremost wool growing counties in the Union with 482,603 pounds annually from 223,000 sheep. In addition, many sheep were "driven to the eastern counties for sale." That same year, Sherman Day's Historical Collections of Pennsylvania described a region where luxuriant meadows occupied the lowlands, and pasturage the hills; the land was cleared to the hill tops; grains and fruits were grown; and immense sheep flocks produced almost a half million pounds of wool. Even discounting for boosterism, these were impressive figures. The town of Washington was a principal wool-trading entrepot. A report published in 1849 noted that "Philadelphia was formerly our principal market; but recently most of our wool has been sent directly to New York and New England."[7]

The 1850 census showed that across the region, average sheep numbers significantly exceeded statewide averages. Extra sheep accounted for the almost all the difference between county and state averages.



Livestock, 1850 Greene, Washington, Mercer and Lawrence counties.

Sheep raising in western Pennsylvania developed as part of a broader shift. New England and New York (especially the upper Hudson Valley) had been the preeminent sheep raising regions in the colonial and early national periods, and Ohio soon joined them. In eighteenth-century Pennsylvania as well, virtually every farm had a small flock. Early in the nineteenth century, several developments combined to redistribute sheep geographically. One was the rise of cotton and resultant decline of woolen textiles, which made sheep raising economically difficult, especially in the older regions. There, where land values tended to be high, farm families needed better income producers than sheep, which took up a lot of acreage for comparatively low return. A second factor was competition from wool imports, from Britain and its empire as well as South America. A third was competition from the newly developing western states, that is the Old Northwest and western Pennsylvania. As these areas opened up, sheep raising shifted westward because farmers in the west (many migrants from New England themselves) could raise them more cheaply than in the east. [8] And finally, grain farmers in the lower Ohio Valley and soon in Illinois and Michigan took away cash grain markets for farmers in Southwestern Pennsylvania, so the Pennsylvanians sought other ways to more profitably market their grain. In 1833, for example, Greene County residents reported that a shift to livestock raising had taken place when, with settlement in the Ohio River Valley, their market for grain and flour in New Orleans was pre-empted.[9]

The soils, terrain, climate, and vegetation in Southwestern Pennsylvania, eastern Ohio, and northwestern Virginia (now West Virginia) were well suited to sheep raising. Sheep raising was an ideal hill-country pursuit, because by grazing sheep, a herdsman avoided the perils of plowing and harvesting on steep slopes, and prevented erosion at the same time. Sheep required relatively little labor. They could get by (though perhaps not thrive) with rudimentary shelter. And even capital requirements were not always high, since in some instances aspiring herdsmen could rent sheep.[10]

Early sheep grazing in the region was aimed primarily at wool production. Mutton and lamb were not very popular meats among Americans, though sheep were always sold for slaughter; so early breeds were mainly chosen with regard to their wool quality. The most famous importation of sheep to the U.S. was the influx of Spanish Merino sheep which had taken place early in the nineteenth century. A few came in around the turn of

the century, but the most notable importation occurred when the Spanish government, desperate to stave off financial and political instability during the Napoleonic Wars, sold off thousands of prime Merino sheep which had been confiscated from their owners. Twenty thousand came to the United States in a single year.[11] A Merino "craze" swept the country briefly when Jefferson's Embargo kept out foreign competition, then prices settled to more realistic levels. These animals and their progeny helped to establish the American flock. One observer in 1811 witnessed no fewer than six hundred Merinos being driven through Robbstown, Pennsylvania, now New Stanton, about forty miles east of present day Washington, Pennsylvania.[12] This was to be the heart of the Pennsylvania wool growing region.

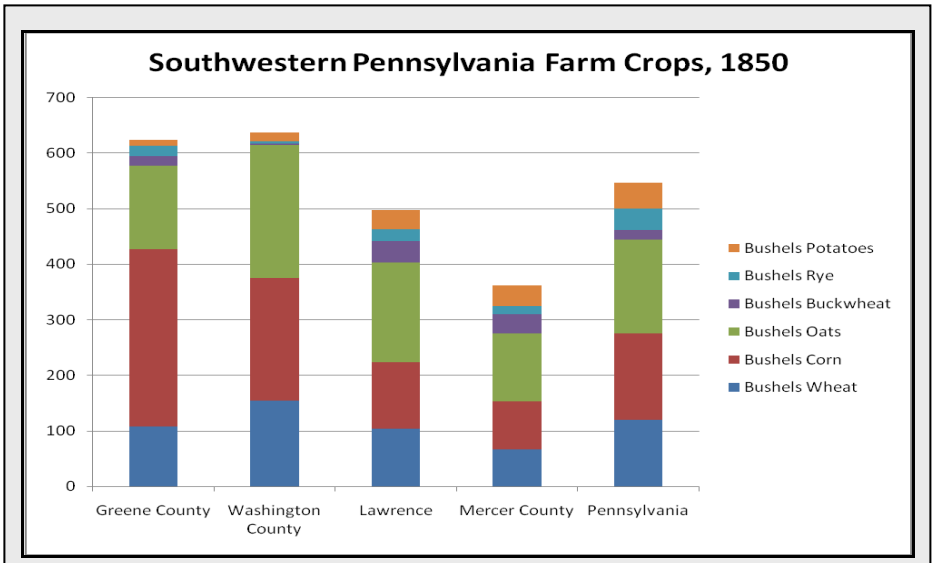
The original Spanish Merino was renowned for its fine, long-staple wool. In fact, the Merino produced a particular class of wool that was labeled "fine wool" in the industry. The "fine" qualities stemmed from the extremely small diameter of typical fibers, and from the pattern of microscopic structures in the fiber's outer layers that imparted smoothness. The wool was used in manufacture of fine broadcloth and worsted, by local manufactories and later by manufactories on the east coast, now accessible to western wool growers because of improved transport.[13] The Merinos were not a hardy breed, though, and reproduced in the Americas at alarmingly low rates. North American breeders set about crossing them with local animals, which were the progeny of animals brought over at the time of initial settlement. Credit is often given to a Mr. Hammond for establishing the "American Merino" in the mid-1850s.[14] This cross was shorter and more compact than the Spanish Merino, and its wool made up a greater percentage of overall body weight. A locally specific breed of renown was the Victor-Beale Delaine Merino of Washington County, a cross between the old Pennsylvania Black Top Merino and the Spanish Merino; "kept in large flocks, without housing and without pampering." Their "short, sharp, and shapely hoof" supposedly helped them keep from getting foot rot.[15] Other American Merino variants (for example, the "Saxon" Merino) had better carcasses for mutton, and the deep wrinkles that had distinguished the Spanish ancestors were bred out. [16] The American Merino ultimately combined fine-wool production with improved mutton qualities. During the period up to about 1850, this process of breed development was taking place, but had not yet culminated.

Given that sheep growers could make money from their animals in several ways, they manipulated the composition of their flocks. Wethers (castrated males) yielded the best fleece; a few rams were kept for breeding; and ewes for increasing the flock.[17] In times of good prices, there was money to be made; in 1847 an excited correspondent reported to the U.S. Patent office that the Washington County clip in that year was "estimated at 1,300,000 pounds!" "… the large sum of $487,500 was realized by the farmers of Washington County for this year's clip of wool!" [18]

Though breeding had improved the quality of western Pennsylvania flocks by the mid-nineteenth century, sheep grazing was by no means a certain path to prosperity. Prices fluctuated quite sharply, affected by conditions abroad, ever-changing tariffs, and the increasing popularity of cotton goods. In general, wool growing in the eastern US seems to have been only marginally profitable in the 1840s and 1850s. Graziers complained about the depredations of dogs and wild predators. Overall, the number of sheep in the North did not keep pace with human population growth. But for western Pennsylvania and eastern Ohio farmers, sheep raising was a "niche" that seemed to work reasonably well given their particular conditions.

Because it was too risky to pursue exclusively, sheep raising took place within the context of a diversified agricultural economy. The 1850 census for Washington and Greene Counties reveals a rather highly developed, large-scale diversified agriculture with sheep as its most exceptional feature, while Mercer and Lawrence had a similar but less pronounced profile. Greene County farms were worth far less on a per-acre basis than statewide, while Washington County farms were about average ($30 per acre). The average farm in both counties was quite large by Pennsylvania standards—169 acres in Greene County, 140 in Washington County, when the average Pennsylvania farm was only 117 acres. Mercer and Lawrence farms were right about at the state average. Improved acreage in the Southwest far outstripped the statewide average—over 90 acres, as opposed to just 55 in the state as a whole. Southwestern Pennsylvania farms produced slightly more field crops than the average Pennsylvania farm, mainly because they grew more corn. Wheat, oats, and hay production approximated or exceeded state averages (on a per-farm basis), while buckwheat, rye, and potatoes were produced in lesser amounts than statewide (though these were relatively unimportant everywhere). The grain,

especially corn and oats, would have been fed to livestock, and hay also would provide fodder. Horses, milk cows, and beef cattle were as common on Greene and Washington County farms as elsewhere in the state[19](on a per-farm basis), and swine were a little more numerous than average. So, overall, the Southwestern Pennsylvania farm at this moment claimed a diverse crop and livestock mix.

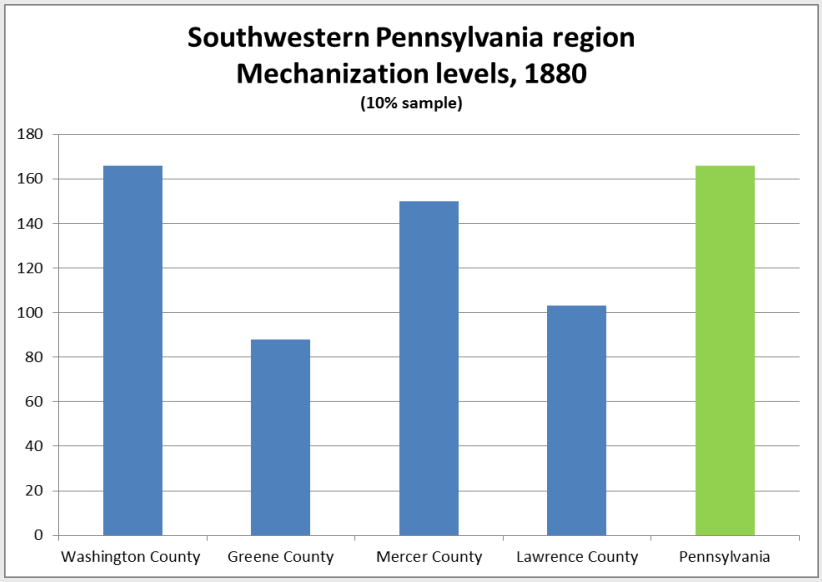


Farm crops, 1850, Greene, Washington, Mercer & Lawrence counties.

Accounting for larger sized farms in Washington and Greene Counties, and average sized farms in Lawrence and Mercer, crop production was at or below state levels.

Despite their much greater than average size, these farms were operated with significantly less machinery than the average Pennsylvania farm. All four counties had below average machinery values, and this was magnified in the case of the larger Washington and Greene county average farm size. The reason for the high improved acreage and low mechanization rate is because pasture (rather than tilled acres) accounted for such a large percentage of improved land. The census definition of "improved" land was land that was cleared and in use for grazing or crop production (even if fallow), so pasture would be included. Sheep numbers dramatically outstripped statewide averages, with the average Washington County holding at 100 per farm, Lawrence at 48, Mercer at 25, and Greene at 28, while the average Pennsylvania farm had just 14 sheep. Some townships averaged over 200 sheep per farm. In fact, by 1850 sheep surpassed other competing grazers (cattle) in terms of absolute numbers and in the acreage of pasture

taken up; between 1840 and 1850 the absolute number of sheep in the extreme Southwest rose and the number of neat cattle actually declined, as did the number of horses.[20] It is possible, though difficult to document, that tilled acres were converted over to pasture as the number of sheep increased.[21] Geographer Richard Beach estimated that 50 percent of pasture acreage in Washington County around 1850 was being grazed by sheep.[22] Pastures did not require frequent plowing or seeding; they were perennial grasses (red clover, timothy, and bluegrass) that, though not indigenous to the area, were apt to grow spontaneously or at least with minimal intervention.[23] The pasture grasses were cropped by the sheep, again eliminating the need for machinery for this job. One correspondent noted that Washington County sheep men planted timothy seed on the hilly slopes, taking care to plant so as to avoid erosion. "To keep our land we plough it only once in eight or ten years."[24]



Value of farm implements, 1850, Washington, Greene, Mercer & Lawrence counties.

Labor and Land Tenure, 1830-1850

Most of the primary sources relating to labor in this system pertain to specific tasks, but are not specific to the four-county region. Nonetheless it is reasonable to assume that labor patterns held consistently in a very wide area; and given what we know about the

topography and production patterns, we can make defensible inferences. All in all, family and neighborhood labor predominated in this period. The crop regime – which resulted in about 200 bushels each of corn, wheat, and oats – would require labor for ploughing, sowing, harvesting, and processing (threshing or shelling). In this era of low mechanization, hand tools prevailed. Communal sharing of work was thus very important if the crops were to be harvested quickly. Published sources such as almanacs and travel accounts suggest that while men probably performed the heavy work of plowing, most other tasks were shared by men and women, and often children as well. For example, during haying, men cut the hay and women followed behind to form windrows.[25] Men and women butchered together; this work included not only the slaughtering, but also curing, sausage making, and so on. Women would have been responsible for tending and milking cows and making the 250 or so pounds of butter produced on a typical Southwestern farm. Where sheep husbandry was concerned, the evidence suggests that few farmers hired shepherds; the animals apparently grazed without much human intervention. Some early accounts maintain that women did the shearing and that fleece were washed and sometimes fulled through communal "bees."[26] As flocks got bigger and sheep keepers became more serious about breeding and productivity, probably some of the larger operations employed hands specially assigned to sheep herding, breeding, feeding, and care.[27] A great many subsistence items were raised in the farm garden and orchard, and those required tending, harvesting, and processing; again, these tasks were shared, but probably women did more than men. Droving may have taken male labor away from the farm at certain times; but fulltime drovers did most of this work. They sometimes hired farm boys to help along the way.

The level of mechanization in the four counties was below the state average. This means that overall, mechanization levels were low, because farms (in Washington and Greene) were so much larger than the state average. Such a pattern would be expected for an agricultural economy in which grazing played so prominent a role.

By mid-century, since so much acreage was cleared, forest products did not present opportunities that were available in other parts of the state. Maple sugar production, for example, was modest or negligible as was lumbering, a result of rapid deforestation. So seasonality on Southwestern Pennsylvania farms was rather different from (for example)

in the Northwest. Haying and corn and wheat harvesting would peak beginning in June and roll into the early autumn; dairying, too, tended to concentrate work in the warm months. Sheep shearing took place in late spring or early summer. Wintertime months were slower; threshing, fence repairs, and other tasks took place then.

Tenancy figures were not collected on an official basis until 1880, but farm tenancy had long been present in the region and state. It was a means through which young farmers could acquire capital and eventually move on to landowner status. Historians Lee Soltow and Kenneth Keller conclude that tenancy in Washington County around the turn of the century existed in a relatively benign form, in which tenants owned appreciable personal assets, and landlords were local landowners rather than absentees.[28]

Buildings and Landscapes, 1830-1850

A number of fine early nineteenth century houses were documented in Washington County survey work. However, very few barns or outbuildings were listed as predating 1850. This is a little surprising given that agriculture was so well developed during this period. Several explanations can be offered for the discrepancy. One could be that field surveyors were conservative in their dating estimates. However, this does not seem likely, because based on the barn style, form, and materials documented in digital photography on the survey forms, most barns legitimately can be dated after 1850, and indeed after 1870. Outbuildings are notoriously difficult to date in any case. Two interlocking explanations may be offered; these may require revision as more information is researched. One is that even as late as 1850, this grazing economy was architecturally non-intensive. In other words, sheep were afforded minimal shelter, and possibly other livestock as well. Since so many animals were destined to be driven out, shelter would be needed only for breeding stock and work animals—a modest stable would suffice. Hay and straw could be stored in ricks or stacks, or in small, insubstantial hay barns, obviating the need for large barn storage areas. And crops could be stored in granaries and corn cribs. A second explanation depends on knowing what came next. There would come a huge wool boom in the 1860s and 1870s; most barns surveyed date from this period. These new structures may have replaced older ones.

Note: six-digit site numbers in the text refer to Pennsylvania Historic Resource Survey file numbers. The others are from Pennsylvania Agricultural History Project fieldwork.

Houses, 1830-1850

Previously documented nineteenth century domestic rural architecture in Mercer and Lawrence Counties shows a varied repertoire of housing, combining New England-derived forms with forms more common in southern and central Pennsylvania. The Historical Resources Inventory for Mercer County[29] includes the Howard House in Findley Township, a single story building executed in brick, built in 1848. The Stranahan House in East Lackawannock Township was a simple, one and one half story gabled structure, built in 1828. Upright-and-wing houses in the inventory date respectively to 1860 (the Sellers House, Fairview Township) and the 1830s (Byerly House in South Pymatuning Township). These examples suggest a New England / upstate New York provenance in their proportions and classicist stylistic detail. In the 1877 local history, several images (for example Nathan Morford's house, a full blown New York style Greek Revival house with central block and two one-story wings), showed that the Yankee-Yorker habits stretched down to Mercer and Lawrence Counties. Lawrence County's historic resources include a "Salt Box House" dating from after the 1830s,[30] further demonstrating the strong association with New England. However, others attest to the mixed cultural origins of the population. Fullterton Mitcheltree's farmhouse in Mercer County, for example, was shown in the 1877 history as a simple, two-story, three-bay gabled house with ell. The Courtney House in Liberty Township (shown in the cultural resources inventory) was a five-bay, two-story structure with an integral two-story porch reaching across the entire front eaves side. The shallow pitched gable roof and two gable end windows add features that are more commonly associated with German Pennsylvania and the Southwestern portion of the state. The Byers House in Lackawannock Township was another five-bay, two-story structure.[31] Durant's 1877 history also shows a Gothic Revival cottage (page 63). A great many plain four- and five-bay houses are also depicted there. Website archives from Mercer County (the Old Black farm, Grove City) show a generic L-shaped frame house with Victorian trim. In Lawrence County, this mixing was also evident. The A. I. Allen Farm house, for example, a three bay, two-story structure with a shallow roof pitch, center chimney,

walk-in basement, and a two-story porch reaching to the ground level, has characteristics found in German central and southern Pennsylvania.[32] Website photo archives show that "national" styles such as the Italianate were popular here in the nineteenth century also. Field research did verify that this mixing is more pronounced in Mercer and Lawrence Counties.

In Washington and Greene Counties, by this period, substantial farm houses were being built. The surviving examples are probably not representative of period housing, simply because less substantial houses tend to survive at lower rates; but they do suggest that farming paid well in this period. At several survey sites, for example, there are fine early nineteenth century Federal brick houses. The four- and five- bay house continued to be popular into the mid-nineteenth century. Similar designs were executed in wood as well. These houses generally borrow from a cultural repertoire associated with Anglo-American forms, particularly the I-house. They are grand versions of the one-room deep, two story, center passage house that Henry Glassie analyzed in Folk Housing in Middle Virginia. A few, such as the Greek Revival cottage at one survey site, represent popular national styles of the mid-nineteenth century. In general, it seems that this area has more affinities with Ohio and upper Virginia than with Eastern Pennsylvania.

Brick house, Washington County, c. 1830. Site 802426.

One-story Greek Revival house, Washington County, mid–nineteenth century. Site 802254.

Brick "I" house, Washington County, mid-nineteenth century. Site 802306.

Frame "I" house, Washington County, mid-nineteenth century. Site 802435.

Barns, 1830-1850

Pennsylvania Barn: The Pennsylvania Barn and its variations appear in the Southwestern counties. The cultural and agricultural makeup of Mercer and Lawrence Counties, in particular, resulted in the appearance of more Pennsylvania Barns there than in the other two counties. The Pennsylvania barn's main diagnostic feature is the projecting seven- to eight-foot forebay, or overshoot. The barn is banked, and organized such that the upper level consists of central threshing floor(s), flanked by mows, and a granary (sometimes in the forebay, sometimes next to a mow on the bank side). The Pennsylvania barn almost always has a gable roof. On the lower level, stables and stalls (organized crosswise to the roof ridge, separated by alleyways for humans) housed horses, milk cows, beef cattle, and sometimes sheep or hogs.

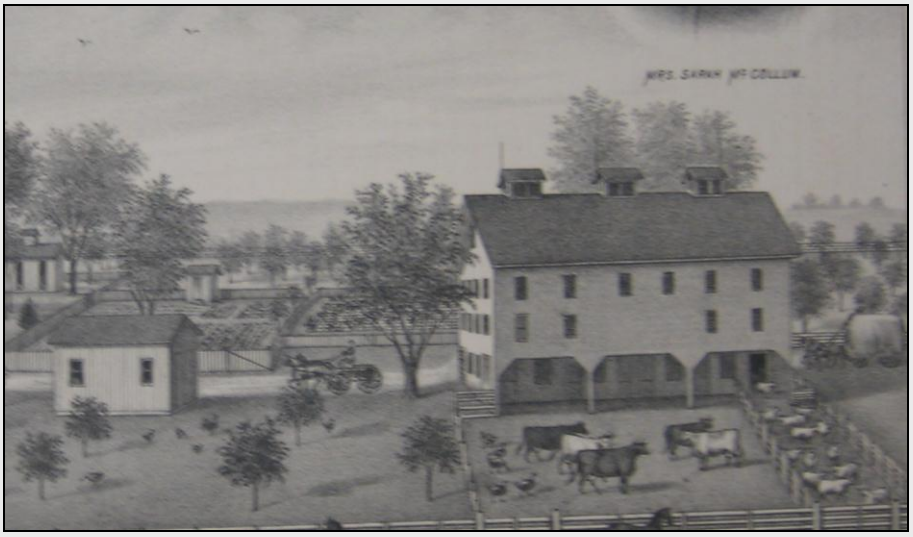
The Pennsylvania barn is a highly flexible form; it ranges in size from just 20 feet long to over 100. It can accommodate features such as an "outshoot" or "outshed" that would extend back from the bank side; multiple threshing floors and haymows; a root cellar; a corncrib/machinery shed extension; a machinery bay on the lower level; or a 'horse power' on the bankside. The forebay might project unsupported, or it might have supporting end walls or posts. Nomenclature for these various features varies, too. But in order to be considered a Pennsylvania barn, a barn must have the essential features: a

projecting forebay and banked construction, almost invariably with the eaves side in the bank. The Pennsylvania Barns documented in Southwestern Pennsylvania fieldwork often had posted forebays. These are common in the Ohio-Pennsylvania border region and in Ohio they are often called "Pomeranian" barns.[33]

The Pennsylvania barn appeared late in the eighteenth century and flourished from about 1820 to about 1900, but in the Southwest surviving examples date only from the mid-nineteenth century and there exemplifies a diversified grain-and-livestock agriculture with particular attention given to sheep. The examples given below have illustrations dating from the late nineteenth century, but the buildings could date from an earlier period, so they are included here.

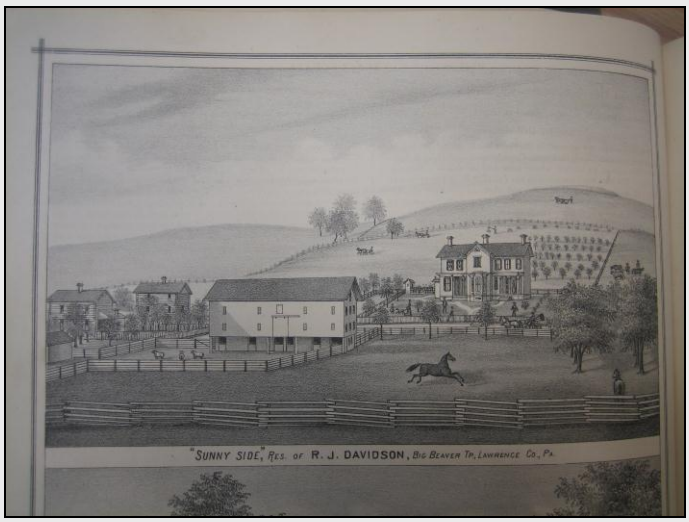
Pennsylvania barn in East Lackawannock Township, Mercer County, mid-nineteenth century. Site 085-WIL-002.

Posted Forebay barn, Scott Township, Lawrence County, mid-nineteenth century. Site 073-SCO-007. Though the under-forebay fencing may be modern, it still suggests separate compartments that could be for sheep. The 1872 county atlas for Lawrence County shows a James Stoner at this site, with 143 acres. The 1880 manuscript agriculture census for Scott Township gives James Stoner as the owner of 85 tilled acres, 12 acres in permanent meadow or pasture, 25 of woodland, and 22 other acres. The farm was worth $8,700, and Stoner claimed $100 worth of implements and $800 of livestock. He harvested 20 tons of hay. His livestock included four horses, for milch cows, six other cattle, eight-six sheep, and 36 lambs. While these data are for a later period, it is likely that this farm supported at least as many sheep earlier on. See United States Manuscript Census of Agriculture, Lawrence County, Scott Township, Page 3, Line 5. Accessible at http://www.portal.state.pa.us/portal/server.pt?open=512&objID=2958&&SortOrder=100&level=5&parentCommID=2606&menuLevel=Level_5&mode=2.



This 1877 image of the McCollum farmstead in Lawrence County clearly depicts a posted-forebay barn being used for sheep, cattle, and turkeys.

Posted forebay barn, Washington Township, Lawrence County, mid- to late nineteenth century. Site 073- AS-007. Compare with R. J. Davidson farm picture from Lawrence County 1877 history and with the barn at site SCO-007. This could not be definitely matched up with a nineteenth century owner.



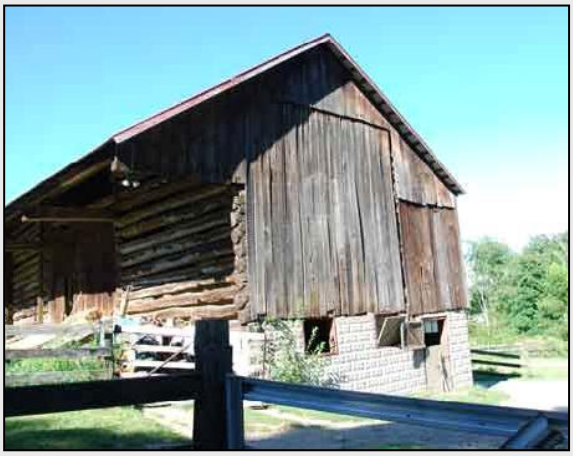
This 1877 image shows R. J. Davidson's farm; the census shows that he had 47 sheep in 1880. Samuel W. Durant, History of Lawrence County (Philadelphia, 1877), facing page 35. Davidson agricultural census entry is in United States Manuscript Census of Agriculture, 1880, Lawrence County, Big Beaver Township, page 9, line 2.

James M. Lawrence reported 70 sheep and 22 lambs in 1880. Note the main barn with sheltered areas for sheep and large hay bay in between; also, the shed perpendicular to it has the characteristic lower level sheds and upper level ventilation. United States Manuscript Census of Agriculture, 1880, Lawrence County, Plain Grove Township, page 17, line 6.

In Washington and Greene Counties, there are fewer mid-nineteenth century barns remaining on the landscape. These are all relatively small, tripartite structures. Some were all on ground level, others had multi-level access. At site No.802275 in Washington County there is a gable-entry bank barn with a cut stone foundation. It had small doors and one window in the basement level, for livestock ingress and egress; and the upper level likely was used for machine storage, hay storage, and grain storage. At site 802332 in Washington County a barn dated c. 1850 looks like it may be an English barn.[34] This barn had its entrance in the long side and three sections consisting of hay bay, threshing floor, and stables. This multipurpose barn housed the absolute necessities of settlement-era farming: draft animals and a few cattle to over winter; perhaps a few sheep, a few tons of hay to feed them; a place to thresh grain and store equipment.

Log barn, Washington County, c. 1840. Site 802369.

At site 802467 in Washington County, there is a mid-nineteenth century log barn. It seems to be organized on similar principles to the English barn, but it has a shallow basement, probably for livestock. At sites 802294 and 802369 log barns were probably double-crib bank barns before alterations converted them later. There are also log crib barn at sites 802857 and 802860 and 802850 in Greene County. These barns likely functioned in the same way that settlement-period barns did. They housed livestock, probably over wintering a few select animals; stored some of the hay crop and perhaps some grain; and had a threshing floor.



Log barn, Washington County, c. 1840. Site 802194

These barns reflect several aspects of Southwestern Pennsylvania agriculture at mid-century. One was that many animals were either driven out or minimally sheltered.

Another is that some hay and straw were probably stored outdoors in stacks or ricks. And finally, a diversity of cultural repertoires were represented, with no one tradition predominating.

Springhouses, 1830-1850

Spring house, Washington County, mid-nineteenth century. Site 802343.

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

The purpose of a spring house is to protect a valuable water source, but also to provide a space with a constant, cool temperature for cooling milk and other perishables. The spring house's siting is determined by where the spring is; so with respect to the farm buildings, its location is unpredictable. Sometimes it's near the house, but springhouses can be found in a field. Spring houses in the Southwestern Pennsylvania region represent the work of butter dairying. The average Washington and Greene County farm in 1850

produced over 250 pounds of butter per year. In Amwell, Chartiers, and Mount Pleasant Townships (Washington County), the average was significantly higher.

Spring House, Washington County, mid-nineteenth century. Site 802441.

Log spring house, Washington County. Site 802218 (Chartiers Township).

Springhouse, Washington County, with 1855 date stone reading "A E Slusher". Site 802213. Washington County survey sites 802184, 802251, 802253, 802306, and 802367 also have mid-nineteenth century springhouses.

Granaries, 1830-1850

A granary is a structure devoted to storing threshed grain. Whether grown as a cash crop or for animal feed, small grains (principally wheat, oats, barley, and rye) were a valuable and highly vulnerable component of the diversified farm's product mix. So, secure storage for small grains has consistently been a priority. (Corn, another small grain, was stored in the ear in a specialized corn crib.)

Their typical characteristics include the following: wood construction; tight boarding, thus few if any windows; gable end pass doors and entry doors; interior bins, partitioned from one another; interior walkway. Very often, the granary was elevated off the ground, as a means of deterring rodents. Many of the granaries surveyed in the Southwest were sited near the barn, or between a sheep barn and a multipurpose barn.

The freestanding granary seems to have been quite common in the Southwest. Here, the Pennsylvania Barn, with its integral interior granary, was not as common a barn type as in the southeast and central portion of the state. In the early period of agricultural development, possibly the granary was necessary because there was so little barn space of any kind.

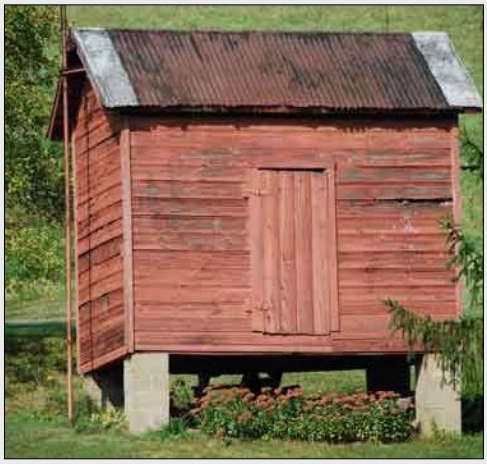
The dating for granaries is extremely imprecise. There are dozens of granaries documented in Washington and Greene County survey work, and survey crews dated most to the late 19th and early 20th centuries. This one may be a little earlier simply because the boards are relatively wide and the size small. It would not be rare to replace the piers on which the granary stood.

Landscape Features, 1830-1850

Landscape features including pasture, treeline, woodlot, specimen trees, stream, and meadow.

Crop fields may retain their original location owing to soil fertility and topographical conditions, but crop field size is likely to be larger than historically would have been the case, because modern machinery requires room for maneuver.

In some cases boundaries within the farm may remain, for example between crop field and pasture. Woodlot and pasture locations may also have continued from historic patterns. Many roadways still follow portions of their historic paths. The National Road, Forbes Road, and many minor roads are good examples. These had an influence in shaping farmstead layout.



Granary, Washington County, nineteenth century. Site 802337.

Few original landscape features from this period will have survived. Property boundary markers are one exception. For example, at site 802965 (Greene County), the treeline on the ridge follows the original property boundary.

1850-c. 1890: The Civil War Era Peak Period

Products, 1850-1890

While the 1850s saw mixed economic fortunes for sheep growers in general, the wool growing economy in the Southwest continued its development. The "American Merino" breeding projects began to show encouraging results in the mid-1850s, with some specific breeds developed right in Washington County. Area wool growers found new markets among eastern manufacturers, increasingly accessible through the new rail system. Washington was connected to Wheeling, West Virginia by 1860, and to Pittsburgh in the 1870s; and Waynesburg and Washington were connected in the 1870s.

By 1860, Washington County, Pennsylvania was the nation's leading sheep county. Over 350,000 sheep were counted within its borders. (For comparative purposes, there were 46,805 humans in the county that year.)[35]

With the American Civil War came a boom in wool growing. The vast Union Army generated huge demand for uniforms and blankets. Moreover, since the cotton supply had been cut off, other fibers would need to replace it for civilians, too. Military historian Carol Reardon offers the following information about military uses for fine wool cloth:

> While enlisted men wore heavy wool uniforms manufactured for and issued by the U.S. Army, officers usually purchased their own tailor-made wool uniforms made of "fine cloth." The demand for these uniforms would have been constant throughout the war, since the cut of the uniform and the button arrangement differed from rank to rank. If a captain got promoted to major, he'd probably want to upgrade his uniform. New regiments with whole new sets of officers were raised throughout the war, so there would always have been a need for uniforms of this sort. Cassimere, a "light woolen" cloth, seems to have been a particularly popular choice for suits and uniforms. Apparently a good number of pre-war or early-war militia units that designed their own uniforms used cassimere cloth in their manufacture. …. As the war progressed and the original uniforms wore out, it got tough to replace them with goods of similar quality, and most soldiers reverted to the coarser government issue--but not always…Things like enlisted men's rank chevrons (sergeant and corporal stripes, for instance) could be made of cotton or wool worsted. …One other cloth with a wool base to it was felt, of course. Felt had many uses during the war, from hats to canteen covers. The higher quality felt came from the finer wools.[36]

During the wartime years, sheep numbers nationally rose dramatically as farmers responded eagerly to this new opportunity. Agricultural historian Paul Wallace Gates infers that the increase was achieved by withholding older sheep from the meat market, arguing that this is a valid inference because mutton prices rose during the period. Not only did sheep numbers increase, but each fleece weighed more owing to better care, feeding, and shelter. Overall, paper-currency prices for wool achieved an encouraging

lift, but this was deceptive since by the gold standard, prices did not rise far above pre-war levels. This was because imports from Britain, its empire, and South America continued essentially unabated. Nevertheless the voracious Northern woolen manufactories snapped up all they could obtain and so demand was brisk.[37]

During the war, the newly formed United States Department of Agriculture issued Monthly and Bi-Monthly Reports on agricultural production. These were not censuses, but rather estimates based on various reports issuing from localities, and also on responses to circulars the department sent out. As pioneering efforts in statistical data gathering, they probably fell short in many respects; yet the general picture they assembled is corroborated in other, impressionistic sources. They are critical for estimating the impact of war, because by the next census year (1870), circumstances would again change significantly. In May 1863, the department reported a 20 percent increase over 1862 in the number of sheep in the Loyal States. In early 1864 the department estimated that wool production in the Union had doubled, from about 50 million pounds in 1861 to a projected 109 million pounds in 1864. In Pennsylvania alone, sheep numbers went from 1.6 million to about 2.6 million in the same time period. The Secretary of Agriculture in the spring of 1864 reported that "there is no change in our agriculture so gratifying as the increase in sheep." In March of 1865 he also noted that not only had sheep numbers risen, but the weight of fleece had, on average, improved. From around 3.5 pounds per head, now "the general increase of the larger breeds, the substitution of Spanish for the Saxon merinos, and the greater care now bestowed upon the keeping of the flocks, have increased this average yield to at least 4 pounds."[38]

In all, the evidence points to the Southwest's energetic participation in the wartime wool boom, though Washington County, as a fine-wool country, did not produce the types of wool in greatest military demand. Paul Wallace Gates points out that coarse wools were more prized for army purposes than the fine wool. It is not clear to what extent Southwestern Pennsylvania participated in the trend discussed by famed sheep expert Henry Randall, in his introduction to the 1863 edition of his standard text The American Shepherd. Randall noted that "… a great change has taken place, as fine-wool sheep are gone, replaced by the 'improved English' breeds. These were virtually unknown 15 years ago. The war has further made matters urgent…"[39] Given the dramatic increase in sheep

numbers, it is likely that both coarse and fine wool were raised in the Southwest. Fine wool, too, was highly sought after, because civilians needed substitutes for cotton and the military needed fine wool for dress uniforms and undergarments. During the war, buyers from the east coast frequented Washington County and advertised their services in local newspapers. Sales of Spanish Merinos were also advertised in the paper in 1863. Growers' voices appeared, too, mostly in complaints about wool brokers' alleged dishonesty. [40] It is a little hard to escape the impression that the growers mainly hoped to extract large profits in a wartime situation. Fleece weights increased significantly during this period, and breeding efforts began to pay off, and to give the county a national reputation. Local sheep breeders helped to develop the Delaine Merino and the Black Top. Improved feeding and care also helped boost productivity. Greene County joined in the sheep boom; by the 1870s, numerous flocks of over 100 appeared there.

After the war, wool prices began to drop as the South recovered and the global cotton boom continued, and as the western United States developed its grazing capacity. Tariffs rose and fell depending on the national political situation. For a time, wool growers enjoyed protection, but by 1894 free trade asserted itself for good. These factors, compounded by expanding extractive industries, would eventually cripple the sheep grazing business in Southwestern Pennsylvania.[41] It is important to recognize that as a fine-wool district, Southwestern Pennsylvania preserved a competitive edge for a while longer after the national price decline set in. Indeed, in 1880, Washington County boasted the highest farm value in the entire state.[42] To be sure, farms here were larger than average, too, but nonetheless this speaks to the great prosperity sheep husbandry brought. The deeper effects of decline were not felt until the 1890s.

Where land use was concerned, the significant differences from the typical Pennsylvania pattern continued, if anything exaggerated. In 1880, the typical Washington County farm devoted, on a percentage basis, far more of its land to pasture and far less to woodland than the average Pennsylvania farm. About 60 percent of its acres was tilled (as compared with 52 percent in the state as a whole), but this is misleading, because more of that land would be in grass than on a typical Pennsylvania farm. Popular grasses and legumes included red clover, timothy, and bluegrass.[43] In Mercer and Lawrence

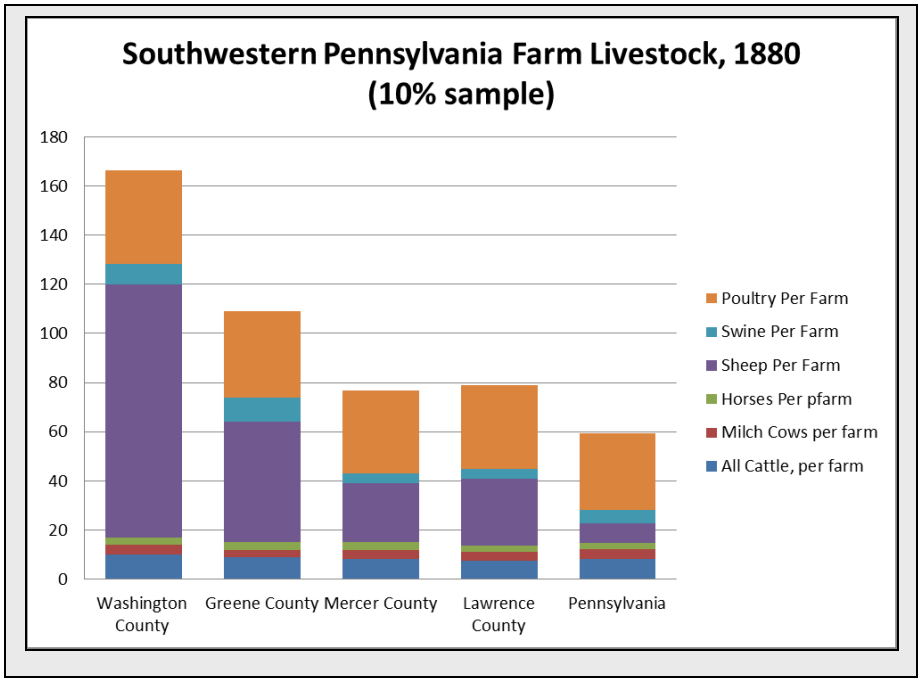
Counties, land use patterns were closer to state norms; but sheep numbers on average were high there, in numerous townships exceeding 50 head per farm. [44]

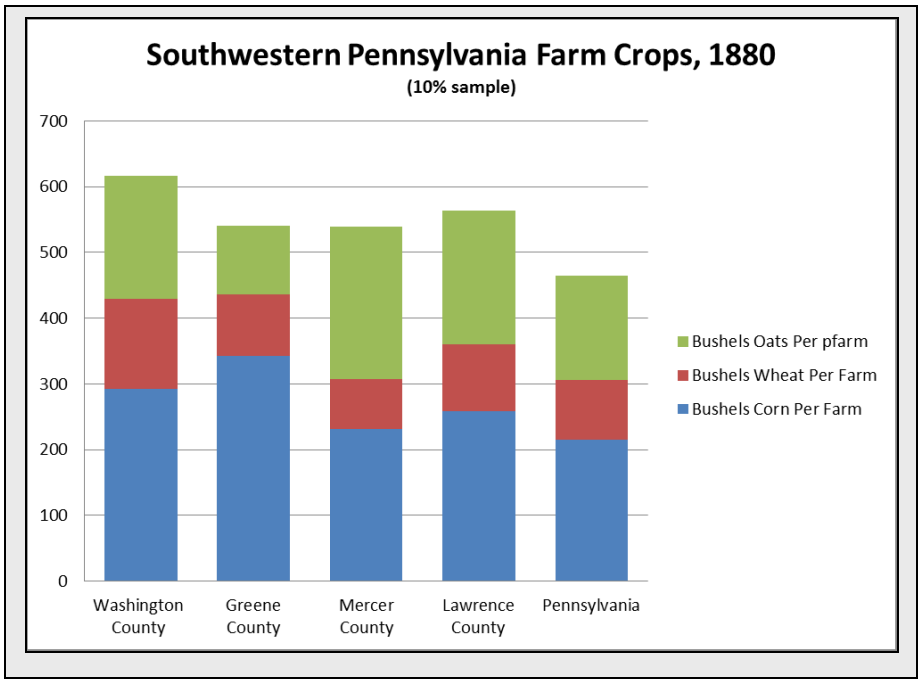
Despite its sheep raising fame, the region's farm economy was still very much based on a mixed grain and livestock system. Where major grains were concerned, Washington County farms still out produced the average Pennsylvania farm – though probably because farms were larger, rather than because per-acre productivity was high. These grains were used primarily for feed, and as nurse crops,[45] rather than as cash crops.[46] By 1880, Mercer and Lawrence County crop production had developed to a point where their cropland and production actually exceeded statewide averages. The region out-stripped state sheep raising averages by more than ever, primarily because by 1880, Pennsylvania as a whole only had eight sheep per farm. Otherwise, livestock numbers in the region varied. Washington County also had more swine than average; slightly more beef cattle than average; and about average numbers of horses and milk cows, and poultry. Washington County was beginning to develop a dairy industry; it slightly exceeded state averages in butter production per farm (384 pounds, well above subsistence levels), and in milk sales (143 gallons per farm per year) as well. This was a significant change from a position below state averages at mid-century. Richard Beach notes that this growth was geographically concentrated near Washington, Canonsburg, and Monongahela, and also along rail lines that led to Pittsburgh.[47] The industrial and extractive booms of the period created new population centers and thus markets for farmers in the vicinity. In keeping with the grazing tradition, Washington and Greene Counties also had more beef animals than average in 1880. [Greene County figures unavailable as of April 6, 2008] Finally, the region had slightly more poultry numbers than the state average; a report from Greene County noted that "people are paying more attention to poultry…" [48]

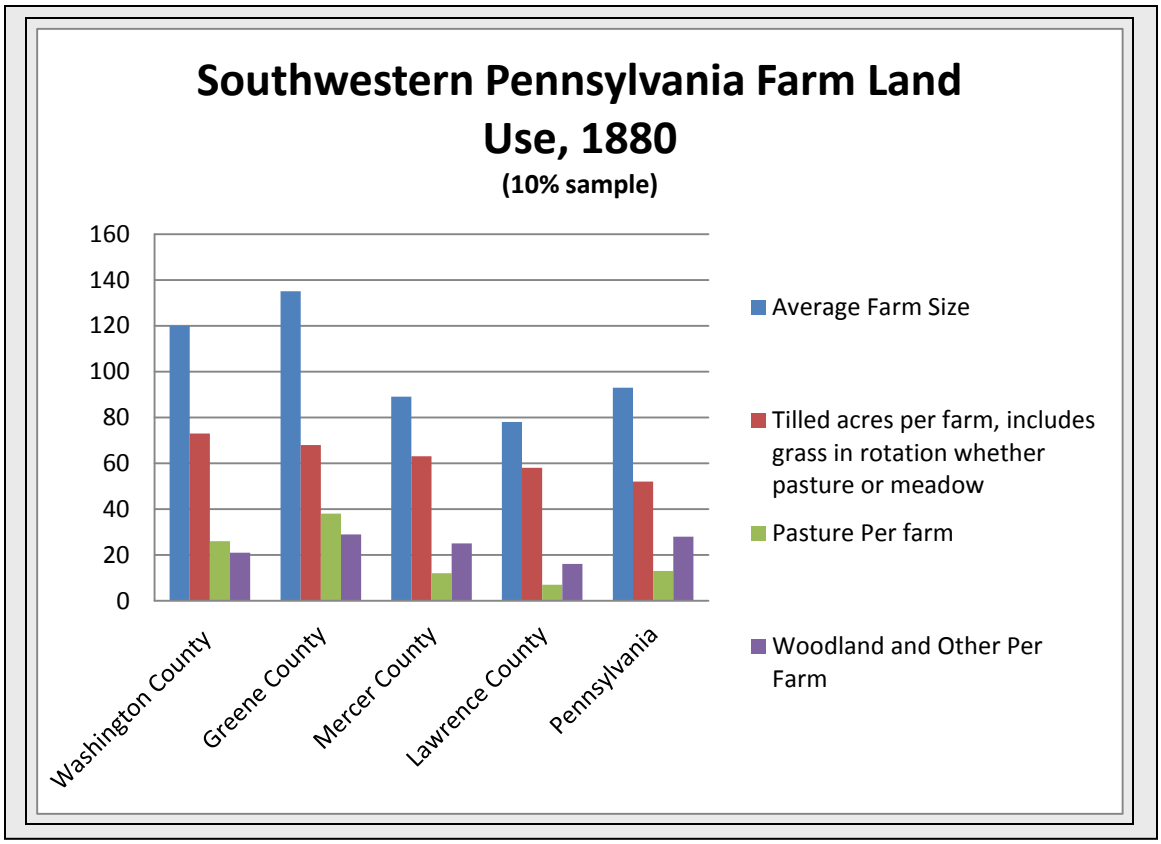
Diverse family production flowered in these years. Farms were well established and families looked to gain a "competency."[49] As time went on, the meaning of a "competency" evolved away from something close to subsistence, and for many people it came to mean a life with an enhanced level of material comfort—not ostentation or excess, perhaps, but beyond the mere necessities. Architecturally it often meant more room, up to date furnishings, and better heating. Where food was concerned, it usually meant greater variety. New technologies, most notably the wood burning cook stove,

helped to raise expectations for dietary variety. 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. Pies, jams, preserves, and baked goods became popular. These were created through the energies of women.

By the late nineteenth century, the farm family's "competency" was becoming elaborated all over the Southwest. Most farms had mature orchards and well established vegetable gardens. Orchards supplied apples, peaches, pears, cherries, and plums. Often multiple varieties of each were raised, each having particular characteristics and purposes (cider, drying, sauce, etc.) and staggered harvest times. Small fruits such as raspberries, gooseberries, blueberries, and strawberries were often cultivated.[50] The census figures do not capture ordinary garden production, but in this period it was considerable.[51] Period catalogues survive in plentiful numbers and they show that home gardeners could obtain seeds for an astonishing variety of garden crops.[52] A small sampling would include tomatoes, snap beans, peas, squashes, beets, asparagus, rhubarb, turnips, and carrots. Of course, many garden crops were also grown from seeds handed down over several generations. Bees were also kept on some farms.[53] Gathering continued as well, for wild fruits such as blackberries and huckleberries were plentiful, as were wild-grown walnuts and hickory nuts. Another 1896 summary mentioned over 20 fruits and vegetables commonly grown in Greene County.[54]


Southwestern Pennsylvania Farm Livestock, 1880
(10% sample)
180
160
140
120
100
80
60
40
20
0
Washington County
Greene County
Mercer County
Lawrence County
Pennsylvania
Poultry Per Farm
Swine Per Farm
Sheep Per Farm
Horses Per pfarm
Milch Cows per farm
All Cattle, per farm


Southwestern Pennsylvania Farm Crops, 1880
(10% sample)
700
600
500
400
300
200
100
0
Washington County
Greene County
Mercer County
Lawrence County
Pennsylvania
Bushels Oats Per pfarm
Bushels Wheat Per Farm
Bushels Corn Per Farm

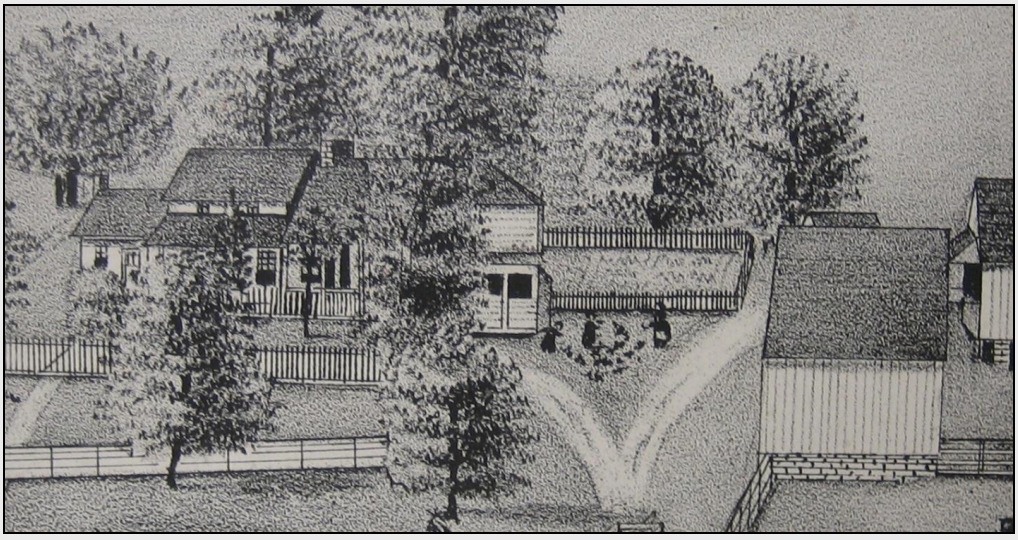


Labor and Land Tenure, 1850-1890

As before, family members supplied much of the labor during this period. Farm tenancy figures show that in 1880 Washington had a higher tenancy rate than the state average (31 percent as opposed to 25 percent), while Greene, Mercer, and Lawrence Counties' tenancy rate were lower. Tenant farms were sometimes noted on county atlas maps. It is likely that access to land was a little more difficult there owing to high land values and competition from industrial and extractive organizations.

In most respects, the pattern of labor allocation followed a conventional division of labor according to gender and age. Women tended the garden and put up fruits and vegetables for the winter; typical tasks would include drying, canning, pickling, and making preserves. Women and children were responsible for poultry raising (for meat and eggs), and they were often assigned to feed swine, cattle, and sheep. Women churned butter and milked cows. Colonel A. Manchester of Independence Township told the Washington County Agricultural Society's Farm Visiting Committee in 1874 that his "ten very fine

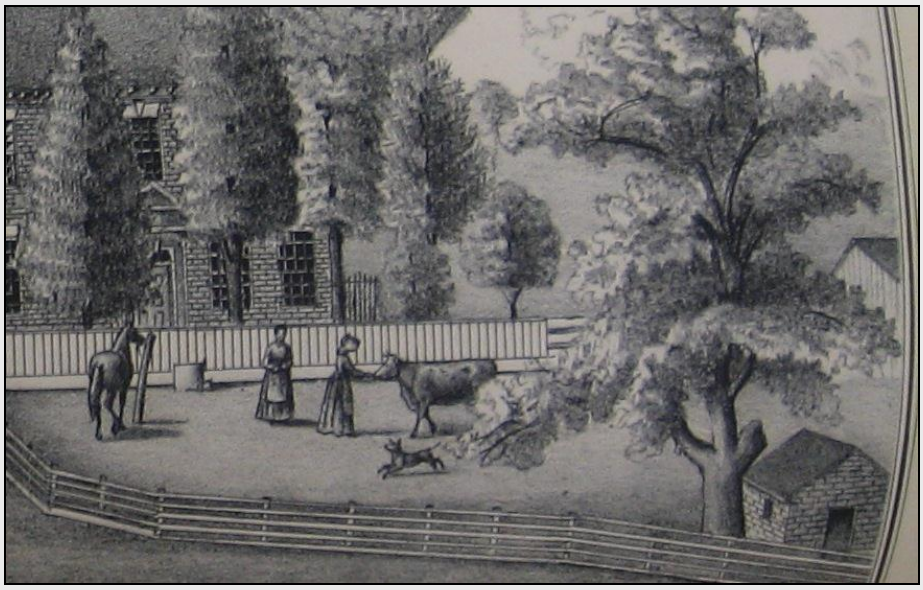
milch cows" were "all milked by Mrs. M. and her daughters, without hired help." The women and girls also made cheese, handled the "large and thrifty garden," and smoked meat in a "smoke house in the garret."[55] Everyone worked at haying time, during fruit harvesting season, shearing season, at threshing and reaping time, and at butchering time. Men handled the sheep; images in the Caldwell atlas depict men or boys (but never women) out in the sheep fold or chasing sheep with sticks. This made sense considering that women were responsible for so many duties in and near the farm house. Men did the shearing as well, either on their own or in cooperation with neighbors.[56] This job was probably more exclusively masculine than before. Still, women would need to cook for the assembled shearers.



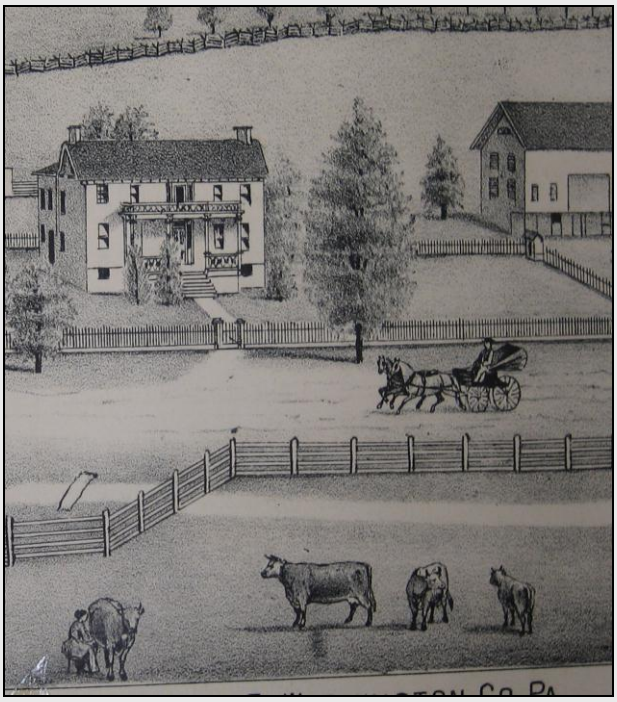
Woman and children feeding poultry. Residence of T. P. and J. J. George, Mount Pleasant, Washington County, c. 1876 *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).

An entire family group posed in a large truck patch, c. 1910, photographer Frank L. France. Historical Society of Western Pennsylvania Collection No.:M74-F8.

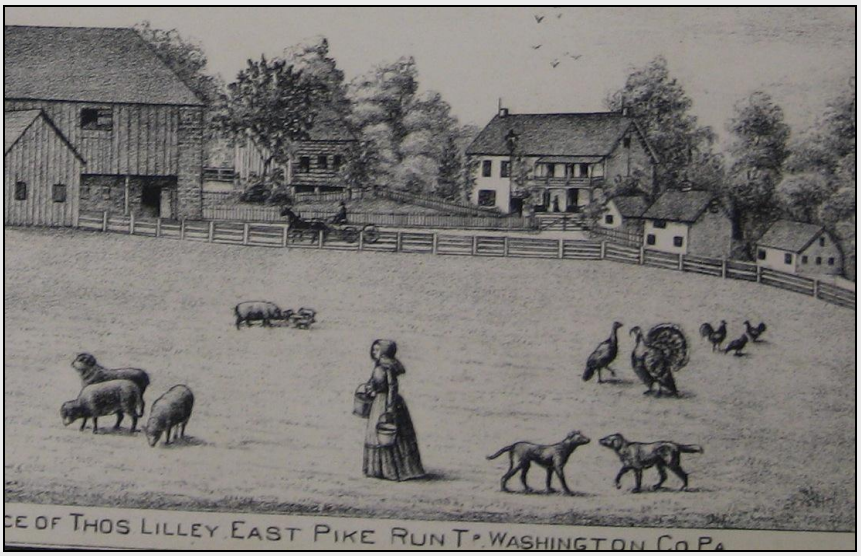
Women feeding poultry, c. 1910, photographer Frank L. France. Historical Society of Western Pennsylvania. Collection No. M425-F13.



Two women with cow (note spring house in lower right), c. 1876, Washington County. Residence of the late Isaac van Voorhis, Carroll Township," *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).[57]



Woman milking, Washington County, c 1876. Note that this job is being done in the open air. This was not uncommon in the nineteenth century.



This woman is depicted with two buckets, ready to feed sheep, swine, and poultry, all of which would be within her purview, either occasionally or routinely. The Pennsylvania barn in this image is complemented by outbuildings that can be identified, from left to right, as a pigsty, granary, springhouse, summer kitchen or workshop, and carriage house. *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).

Buildings and Landscapes, 1850-1890

As a boom period, this era saw many fortunes made, which in turn left an imprint on the landscape in the form of substantial houses, barns, and outbuildings. Survey work documented many houses dating to this time period. Barns, too, proliferated. A particular adaptation of a common type seems to have characterized the sheep economy. Prominent outbuildings from the period included granaries, spring houses, corn cribs, hay barns, sheep sheds/houses, machine sheds, hog houses, and carriage houses. In this period the landscape was so intensively grazed that few woodlots remained. Crops would be planted on level areas and in bottomland. Fencing and other boundary markers would be very important.

Houses, 1850-1890

Five bay center door house, Washington County, c. 1876. Site 802192.

Five bay center door house, Washington County, c. 1890. Site 802301.

Gable front house with ell, Washington County, c. 1880. Site 802516.

Gable front house with Victorian trim, Washington County, c. 1870. Site 802365.

Five bay center door house, Washington County site, c. 1870. Site 802374

Victorian house, Washington County, c. 1880. Site 802487.

Late Victorian house, Washington County, c. 1900. Site 802310.

Gable front house, Washington County, dated 1885 (date in glass circular window in gable). Site 802353

During this period of prosperity, quite a few new farmhouses appeared. Many of them showed a consciousness of current Victorian stylistic trends. The characteristic farm house of the region continued to be the modest "I" house and variations on the form.[58] Some of these farm houses suggest a conservative response to contemporary architectural trends, in that they begin with a common form such as the "I" house, and add Victorian bracketing, window surrounds, bargeboards, and porches with machine turned elements. Others, however, departed from the standard folk forms of the "I" house or the five-bay, two room deep rectangular mass. These buildings, for example at Site 802487, 802353,

802516, and most notably 802310, not only show Victorian era ornament, but forsake traditional forms for intersecting masses and irregular shapes. They were not innovative for their day, but nonetheless they suggest a consistent interaction with city and town of the period, and also possibly an awareness of popular forms and styles derived from published materials such as pattern books, farm journals, and popular magazines. They also signify substantial financial means. In Greene County, the atlas showed similar examples in the depiction of the Residence and Farm of Henry Grimes, Morgan Township, and that of M. M. McClelland.

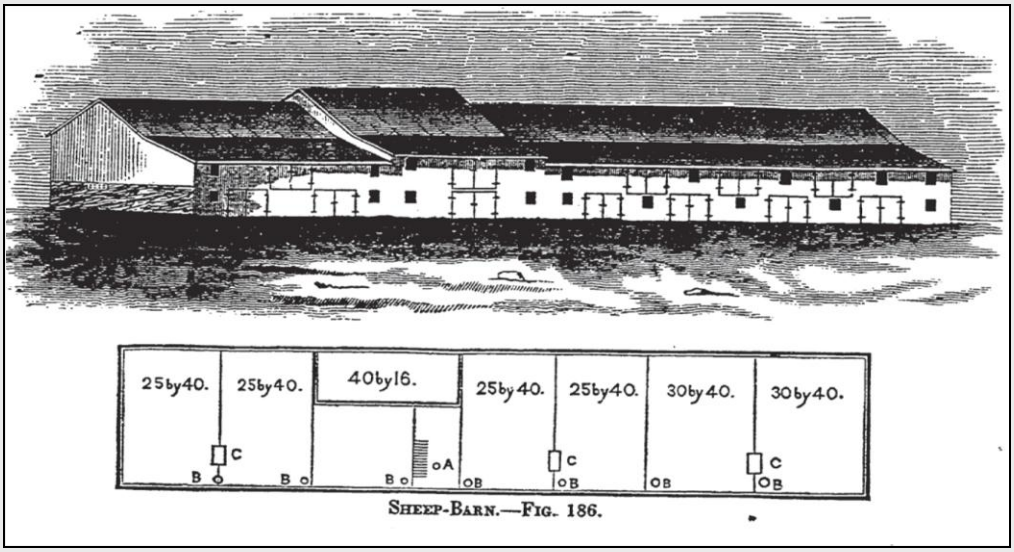
Sheep Barns, 1850-1890

Since the average number of sheep per farm was high during this period, a good many farms must have had buildings that accommodated sheep. At the least, many general-purpose barns of this period would likely have had interior sheep pens, wool rooms, shearing rooms, feeding racks, and hay storage which would have facilitated the sheep raising economy. Specialized sheep barns were also present. Many sheep barns have been documented in Washington County; though dating is difficult, some probably date to this period. Local historian John Jaqueth maintains that "sheds were considered expensive but indispensable, especially for breeding ewes and early lambs."[59] The analysis presented here first focuses on characteristics of sheep barns as described in nineteenth century agricultural publications and secondary sources, then moves on to consider examples from field survey work.

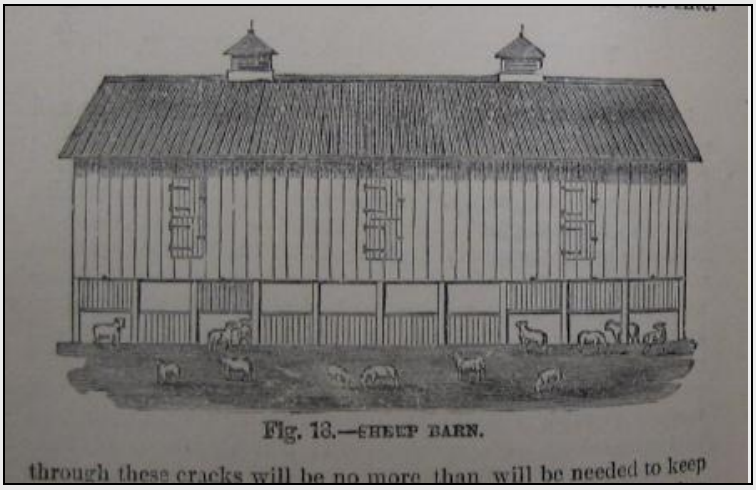
Siting received careful attention in discussions of sheep barns. In 1847, a sheep barn was described in the *American Agriculturist*. In this one, the writer "gives the preference to single barns, which are situated on the borders of his meadows, and therefore very convenient for the reception of hay." His sheep barns with hay storage were 32 by 24 feet.[60] Others argued for a central barn, but still noted that it should be carefully situated. Most believed that the barn should be protected from north and west winds, either by topography or wind breaks.[61] Many argued for siting on a south-facing or east-facing slope. Randall mentioned that the sheep barn was usually near the farm house. [62] There was a general consensus also that siting should take advantage of good ventilation and a dry location. Though sheep needed protection from winds, authors agreed that "an

abundance of fresh air … is one thing that sheep demand." [63] The dry location was needed because sheep are susceptible to foot rot. Some advice manuals recommended a dirt floor, plentifully covered with straw. This recommendation stemmed from another susceptibility of sheep, their tender hooves.[64] Multiple doors and windows were recommended, the former to give flexibility in patterns of access, the latter to provide light and ventilation. Typical heights recommended for doors were seven to eight feet. [65]

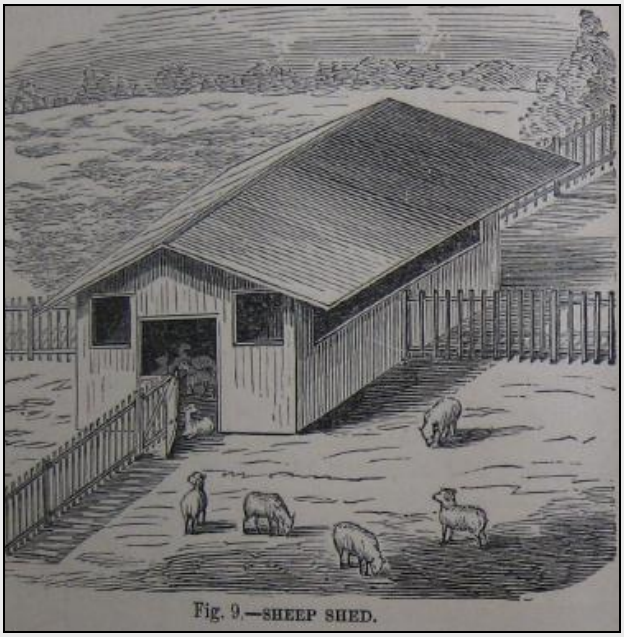
Plans published in the mid-1840s showed a two story central portion with one story wings flanking it.[66] Sheep barns as described in nineteenth century published sources ranged from 40 by 60 feet, to just 20 feet wide. For example, in 1847 the American Agriculturist published a "Plan of a sheep-barn." This was actually three long, narrow sheep barns arranged in a "U" pattern, each "50 feet in length by twenty in width, with 15-foot posts, the first room or sheep-room to be six feet and a half in height…" This writer believed that the sheep should be "on the ground," that is, the building should have a dirt floor. (Others repeated this advice over the years.)[67] The writer went on to emphasize that the building should be "well ventilated" by windows on the upper level." Filling out the bottom of the "U," making it a square, was another barn with carriage house, shearing room, horses, hay mow, wool room, oat granary, and root cellar. The wool storage room, the author stated, should be "made tight against rats, mice, and dust, lighted by a window in the end of the barn…"[68] Stephen Powers, writing about The American Merino in 1887, described a sheep barn with pens on the ground floor and loft above for hay and wool. The wool room had a "tight and smooth" floor and walls, and a shearing area at one end.[69] Adequate doors for ingress and egress were important. James D. Ladd explained why: "this allows a large number to pass abreast, and prevents injury from jambing against the sides."[70] Doors for manure removal were also needed. Another frequently mentioned characteristic was that the hay storage above the sheep be fitted with an extra tight floor. This was to prevent hay seeds and stalks from falling down and getting into the fleece.[71] Powers explained: "I have seen sheep going around with hay-seed sprouting and the grass growing out of the wool on their backs."[72] This statement was no doubt hyperbolic, but Powers made his point colorfully.



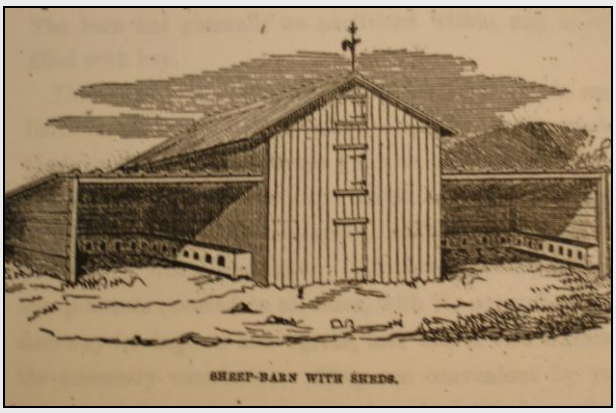
Plan of a sheep barn. "Sheep-barns and shelters," American Agriculturist. November 1847; pages 6, 11; APS online, page 344.



Engraving of a sheep barn. From Henry Stewart, *The Shephard's Manual : a practical treatise on the sheep.* New York, 1882, p. 50.



Engraving of a sheep shed. From Stewart, The Shephard's Manual, p. 32.



Sheep barn with Sheds, illustration from Robert Jennings, Sheep, Swine, and Poultry..., Philadelphia, 1864, page 152. This had been published earlier by Henry Randall in his Sheep Husbandry (New York, 1848), page 205.

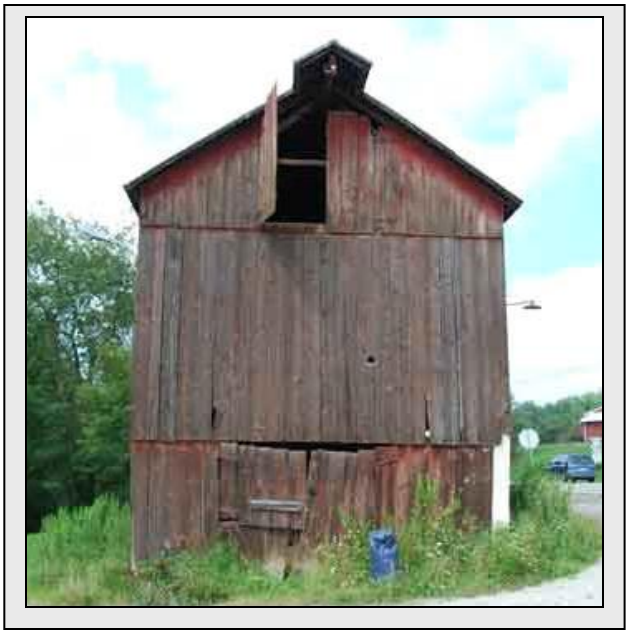
An 1893 book titled *Practical Hints about Barn Building*... contained several plans and elevations of sheep barns. Of particular interest for our purposes was a design from central Ohio of a sheep barn put up by "Hill and sons," probably in the 1880s. On the eaves side, the barn's lower level had three window openings and two hinged doors. A pent eave provided protection. The eaves side second level had asymmetrical fenestration (three louvered ventilators) and a centrally located hay door; one end was blank. The plan revealed the inner workings of the sheep barn. The ground floor was

essentially an open-plan space lined on three sides with feed racks. These were supplemented by two hay boxes and a root cellar. On the second story, behind the blank wall was a hay mow; behind the central door was a combination threshing floor and sheep pen. Behind the louvered openings was a lamb pen. Partitions sealed this off from a second-story wool room. Hay chutes allowed for tossing hay down from the mow; a trap door served an unknown function; and a grain bin was located in the wool room. Since wool and grain both needed tight sealing to keep out small creatures who would enjoy a cozy wool nest and access to food, it was logical that these two storage items be located in the same place. This setup would involve moving sheep vertically; this isn't the only such plan, but it is still a puzzle as to how sheep would be shuttled back and forth upstairs and down. A plan in *Barn Plans and Outbuildings* showed a one and a half story sheep barn. This barn, too, had doors and windows in the eaves side and gable end. Roof ridge ventilators provided for the fresh air sheep required. A hay door and hay hood was situated in the upper gable end. The plan for this barn showed that upon entering the gable-end central door, the sheep were diverted either to the right or left of feed troughs that ran lengthwise in the center, about three quarters of the way to the opposite wall. The remainder of the space was partitioned to give a shearing room and lambing pen.

Sheep barn, Washington County, c. 1900. Site 802144.

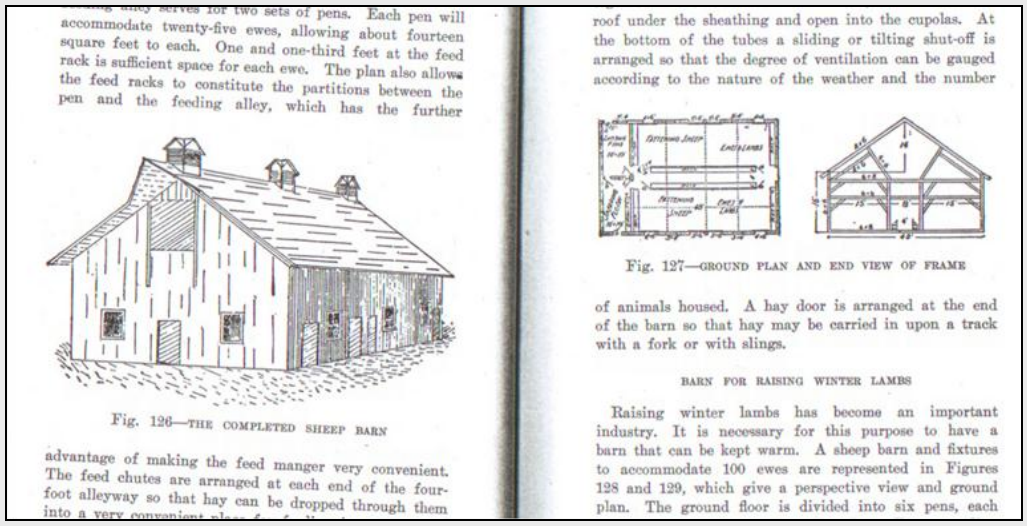
Sheep barn, Washington County, nineteenth century. Site 802213.

Recommendations from prescriptive literature offer a beginning basis on which to identify sheep barns in the field. Actual sheep barns did not always contain all of these features, but they did generally share certain basic characteristics. The sheep barns documented in Southwestern Pennsylvania do have some of the characteristics recommended in prescriptive literature of the nineteenth century, but they do not closely resemble the nineteenth century depictions, and they do not always resemble New England sheep barns, either.[73] With these qualifications in mind, it is still possible to identify consistent characteristic features of Southwestern Pennsylvania sheep barns. Siting could be near the farmhouse or main barn, but often sheep barns can be found at a distance from house or barn, in pasture areas. Barns were long and relatively narrow. They were usually two stories, with a gabled roof. On the ground floor, gable end doors were centrally positioned, usually only on one gable end. A row of small, square windows lined the eaves side on each side. Above them, sometimes rows of louvered ventilators would admit air to the loose hay within. On the upper level, in one gable end, a hay door and sometimes a hood or track extension showed where hay was loaded into the loft. Most sheep barns possessed these basic elements, though sometimes they were differently arranged. For example, at Washington County Site 802144, the position of doors, windows, and hay door were essentially reversed, i.e., hay door and entry doors in the eaves side and windows in the gable end. At Site 802213, a central two-story hay storage area was flanked by one-story shed-roof animal shelters, as recommended in the prescriptive literature.



Three views of a Sheep barn, Washington County, c. 1875.

No interior plans are available for any of these buildings, but some textbook plans suggested a central feeding rack, running lengthwise. Large pens, or even an open plan, rather than individual stalls, were generally recommended. At Washington County Site 802190 a c. 1880 sheep barn suggests a possible interior plan like that in *Barn Plans and Outbuildings*, which was published in 1907, but first copyrighted in 1881. Site 802144 has an exterior pattern that is similar to the Hill and Sons barn. Site 802213 is organized on the same principle as the Jennings "sheep barn with sheds" illustrated above, except that the sheds are enclosed.



accommodate twenty-five ewes, allowing about fourteen square feet to each. One and one-third feet at the feed rack is sufficient space for each ewe. The plan also allows the feed racks to constitute the partitions between the pen and the feeding alley, which has the further

Fig. 126—THE COMPLETED SHEEP BARN

advantage of making the feed manger very convenient. The feed chutes are arranged at each end of the four-foot alleyway so that hay can be dropped through them

roof under the sheathing and open into the cupolas. At the bottom of the tubes a sliding or tilting shut-off is arranged so that the degree of ventilation can be gauged according to the nature of the weather and the number

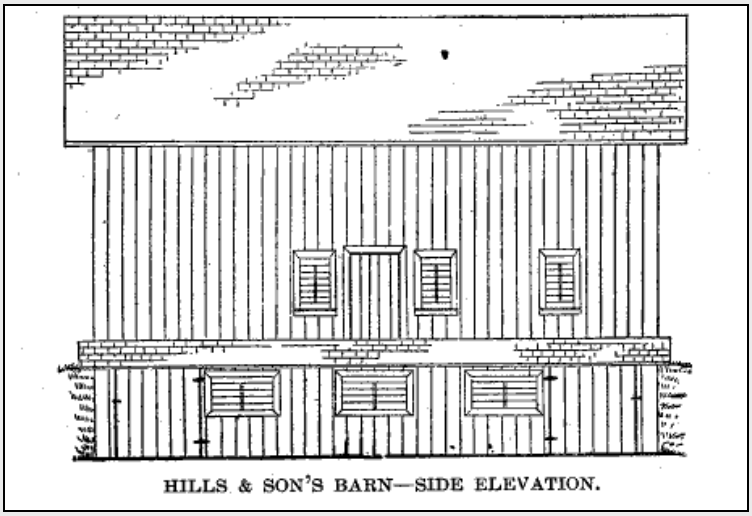
Fig. 127—GROUND PLAN AND END VIEW OF FRAME

of animals housed. A hay door is arranged at the end of the barn so that hay may be carried in upon a track with a fork or with slings.

BARN FOR RAISING WINTER LAMBS

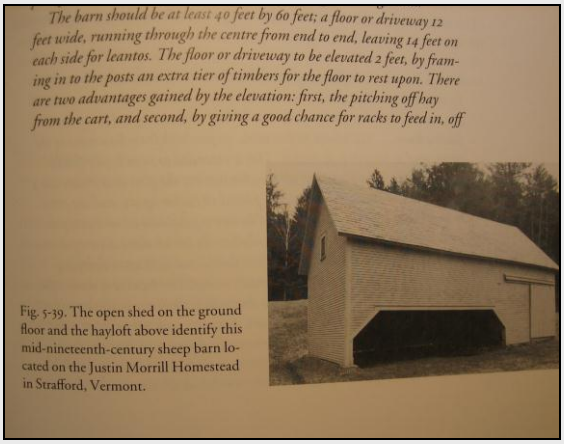
Raising winter lambs has become an important industry. It is necessary for this purpose to have a barn that can be kept warm. A sheep barn and fixtures to accommodate 100 ewes are represented in Figures 128 and 129, which give a perspective view and ground plan. The ground floor is divided into six pens, each

Plan of a sheep barn. From Byron D. Halsted, *Barn Plans and Outbuildings* (New York, 1907), pages 136-7.

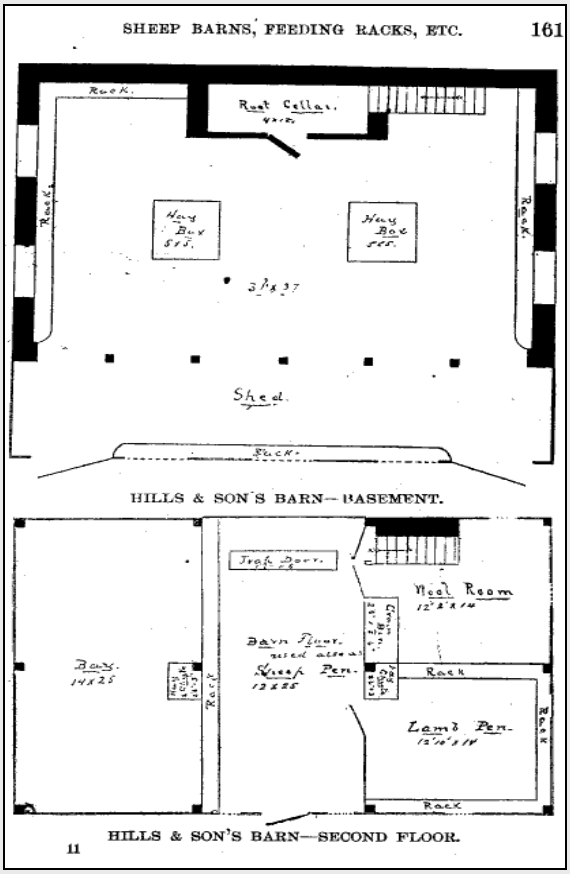


HILLS & SON'S BARN—SIDE ELEVATION.

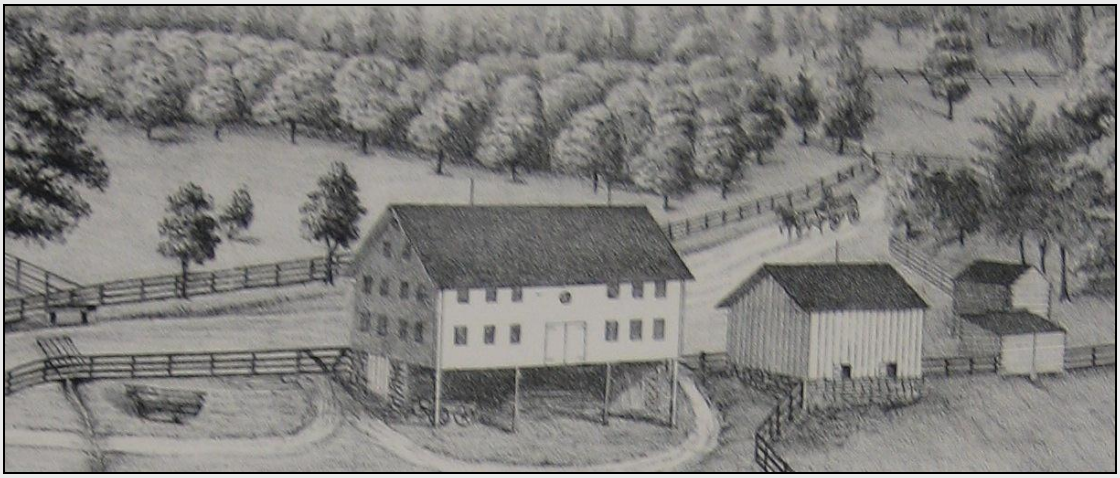
Ohio sheep barn, elevation. From James Harvey Sanders, Practical Hints about Barn Building… (Chicago: J. H. Sanders Publishing Co., 1893), page 162.



Sheep barn, from Thomas Visser, Field Guide to New England Barns and Farm Buildings, page 163.

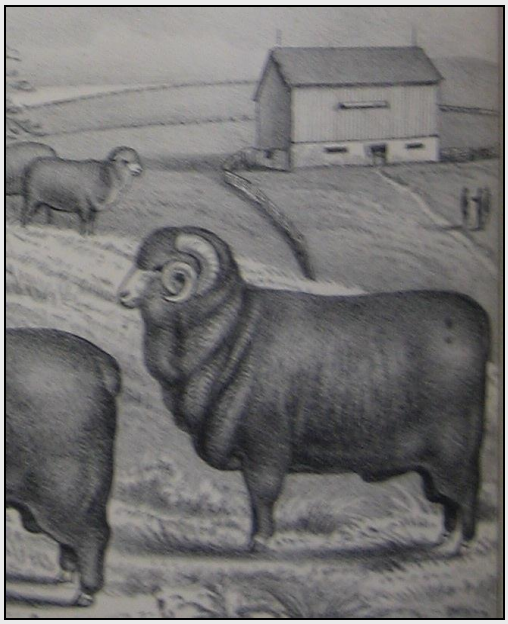


Ohio sheep barn, plan. From James Harvey Sanders, Practical Hints about Barn Building… (Chicago: J. H. Sanders Publishing Co., 1893), page 161.

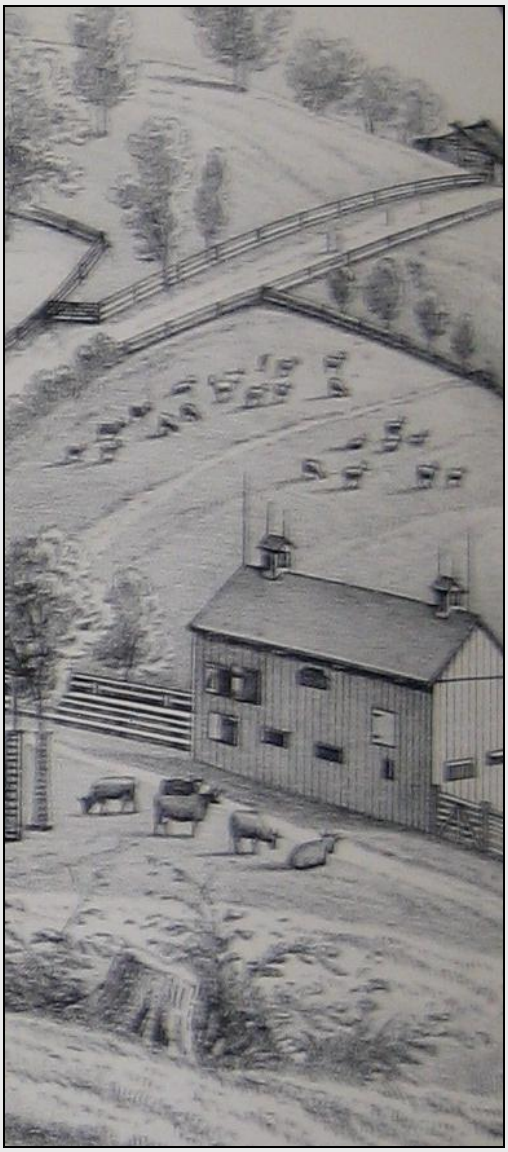


Residence of Robert D. Henry, South Strabane Township, Washington County, c. 1876. Posted forebay barn with outbuildings. The building immediately to the right has small ground-floor windows and possible hay space above that would suggest a sheep barn.

Residence of R. S. Caldwell, Buffalo, Hopewell Township, Washington County, c. 1876. Merino sheep are depicted in foreground. On the far left, a possible sheep barn, with its small, square lower-level windows; the gable end door is ajar, giving a glimpse of hay racks lining the wall.



Buffalo Sheep Farm, Buffalo, Washington County. The building in the background has eaves-side openings and upper-level hay door characteristic of sheep barns. Both images on this page from *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).



Bellevedere Farm, Col. C. H. Beale, Proprietor, Washington County, c 1876. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876). This sheep barn has all the characteristics of the type: lower-level openings, hay doors in the upper eaves side, and roof-ridge ventilators. It looks as if it has two stable levels. On the hill behind is another sheep shelter and sheep fold.

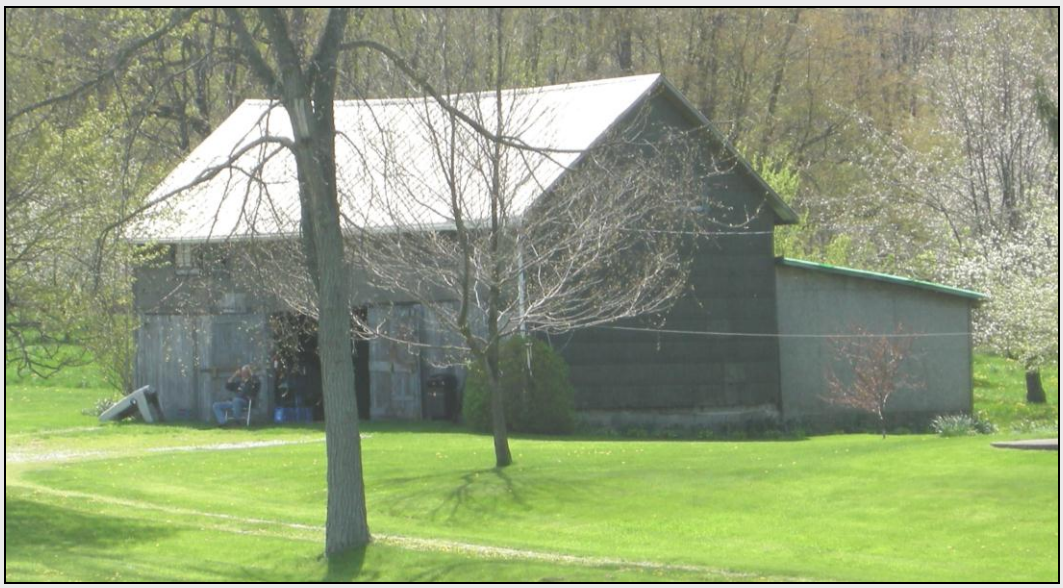
In Mercer and Lawrence Counties, sheep numbers still were relatively high, as well. Fieldwork documented a number of buildings that were probably sheep barns.

Below are photos of some Mercer and Lawrence County buildings encountered in fieldwork that may have been sheep barns. Fieldworkers tentatively labeled most of these wagon sheds or machine sheds, but if we look at these buildings more closely, compare them with historic examples, and match them with historic criteria for sheep barns, we may plausibly consider them sheep barns. Most have the characteristics commonly mentioned: low (seven to eight foot), numerous doors/openings; ventilation; protected siting facing east on a rise and near or adjacent to the main barn; provision for hay storage. While many of them do now store machinery, their entrances are often too small to admit modern machinery. In some cases they have had to be enlarged. Historically, this area had only an average level of farm mechanization, so large machine sheds may not have been needed. Finally, historically the townships where these buildings were documented had relatively high numbers of sheep per farm, and several specific sites have been documented as having sheep flocks in 1880. All of these considerations taken together point to the probable identification of these buildings as sheep barns.

Examples from Fieldwork that exhibit these characteristics:

Sheep barn, Mercer County, East Lackawannock Township, site 085-WIL-005. The site ID indicates Wilmington Township, but the site is in East Lackawannock Township. This building is sited facing east. Its sliding doors rise just above the human door height. Shadows just above indicate possible windows for ventilation. A larger door on the left may have admitted a hay wagon. The building is sited parallel to the main barn, on a rise that slopes to the west steeply and the east gently. The form and siting are very similar to that at Lawrence County site 073-SCO-004. It currently is sheltered by trees, though of course these may not have been present historically. The 1873 county atlas shows a Noah Osborn at this site; the 1880 agricultural census shows Osborn with 150 acres (94 tilled, 6 meadow or pasture, 50 other) worth $6,000. He had a few cows, and reported 65 sheep and 12 lambs. United States Manuscript Agricultural Census, 1880, Mercer County, East Lackawannock Township, page 18, line 8. Note that this site was mistakenly labeled as located in Wilmington Township.

Sheep barn, Greene Township, Mercer County site 085-GRN-004. This outbuilding has openings that were too low for most 19th century machinery and have been altered to admit tractors. It faces east and is sited next to a barn. The 1873 Mercer County atlas shows an "L. Bates" at this site; the 1880 agricultural census shows Lester Bates as owning a large farm, with 300 acres total worth $13,000. He kept beef cattle (42 of them) and also reported 35 sheep and 24 lambs. Currently there are two barns on this property and both are estimated to date from the late nineteenth or early twentieth century; this dating is consistent with United States Manuscript Agricultural Census, 1880, Mercer County, East Lackawannock Township, page 18, line 8. Note that this site was mistakenly labeled as located in Wilmington Township. These large numbers of animals and the substantial grain crops Bates also raised.



Sheep barn, Scott Township, Lawrence County site 073-SCO-004. This building is sited between the house and barn. It faces east. Its doors just admit a human (see seated person for scale). It has windows above for ventilation and a second story that would probably be a hayloft. Trees protect it to the rear. It is on a site that slopes away from the east side. The 1872 Lawrence County atlas shows David Locke at this site; in the 1880 manuscript agriculture census he is listed as owning 26 tilled acres, 10 of meadow and pasture, and 39 other acres worth $3,500. He possessed only $90 worth of implements. His farm produced eight tons of hay and among his livestock were 26 sheep and 22 lambs. His crops included buckwheat, Indian corn, oats, and potatoes, and he had 50 apple trees. There are still orchards on the property. Compare this building to the one at site 085-WIL-005, pictured above. United States Manuscript Agricultural Census, 1880, Scott Township, Lawrence County, page 5, line 3.

Sheep shed, Washington Township, Lawrence County site 073-WAS-003. This structure faces east, has low doors, and is sited on a gentle slope. This property could not be pinpointed to a single owner, but it probably belonged to either a Jordan or a Totten. Both families had farms along this route and both families kept relatively large numbers of sheep. For example, J. Totten had 220 sheep.

Barns, 1850-1890

The most common barn dating to this period found in Southwestern Pennsylvania is termed a "basement barn." The Southwestern barns are related to the basement barns of New York State and Ohio, which became popular there in the late nineteenth century. The basement barn has many alternative names, making identification confusing. Researchers have called it a “raised basement barn,” a “side-hill barn,” and a "Northern Basement Barn." This barn does have some identifying features, though. According to Henry Glassie, it is essentially an English barn raised up on top of a full basement. This contrasts to the partial basement characteristic of the banked Pennsylvania forebay barn: on the lower level of the basement barn, light can enter from all four sides rather than just three. Henry Glassie has noted that frequently the English barn's three-bay organization was augmented by additional bays (for hay) or runways (for machinery or threshing), so that the basement barn version sometimes had more than three upper-level bays. The basement barn never had a forebay, so there would be no forebay wall on the ground level nor framing that would suggest a forebay on the upper level. The basement barn is usually not built into a bank, but normally a bridge or ramp gives access to the upper level on one side. The lower level often has a lengthwise central aisle, and stanchions for dairy cows. There are gable-end doors, usually one in each end. Off center windows in the gable end can indicate where the stable area is located. These barns frequently had gambrel roofs for extra hay storage, even in the nineteenth century.[74]

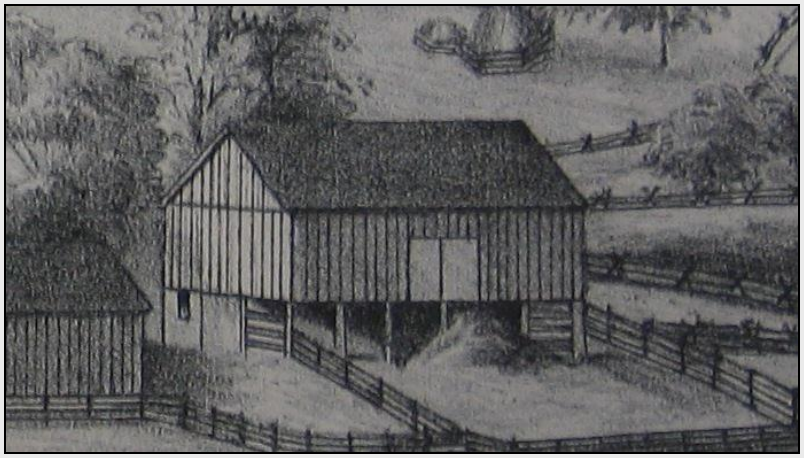
In Southwestern Pennsylvania, the basement barn appears to have been adapted for the specialized livestock raising in that region. Basement barns here look like overgrown sheep barns; the Southwestern Pennsylvania basement barn is essentially a multipurpose barn adapted to cater to the needs of sheep. For example, a Mr. S. Lahm wrote to the *Ohio Cultivator* in 1859 that he had a barn whose lower story was "divided into eight separate apartments for sheep…" The upper level was used for grain, hay, machinery storage, and shearing and wool house.[75] These larger barns had enough room to accommodate not only sheep but also cattle and horses; hay; machinery; sometimes grain; and possibly wool storage and shearing space. John C. Clark of Franklin Township, Washington County, was visited by the agricultural society in 1870; his barn was described as a new barn which had cost $1,800 and had sheep stables on the ground level.[76] Robert Wylie, who lived a short distance from Washington, built a new barn 60

by 44 feet for $3,000 with all the requisites: "every convenience for storing away grain in the sheaf or in the garners [granaries], hay in the mows, corn in the cribs, with a room for tools and implements of husbandry… the stabling for horses, cattle, and sheep is all well arranged…"[77] The barns have multiple, small doors, in keeping with the primary livestock's size and habits. Sometimes the doors are positioned on the eaves side, sometimes on the gable end, and sometimes in both locations. Sometimes these barns have the owner's name over the doors on the eaves side, at the very top. Many of them have shed extensions. Some extensions are on the eaves side, making an asymmetrical gable-end profile. Occasionally these sheds are on a gable end.

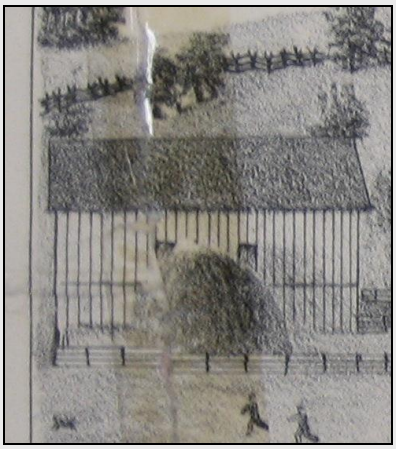
The Southwestern basement barns usually have a gable roof, sometimes a gambrel roof. All are at least two stories tall, and many are two and a half stories. The Southwestern barn usually (though not invariably) has many window openings. On the ground level, there are typically rows of small, square openings on at least one eaves side, frequently on both sides. On the upper level there are varying numbers and types of openings. Sometimes they are glazed windows (example, Washington County sites 802337, 802349, 802407, 802414). Most often they are just louvered, regularly spaced openings. On the eaves side opposite the ramp, at the upper level, often there are large doors positioned roughly in the center. Often nineteenth century depictions show large stacks underneath these doors, probably depicting straw from threshing or hay thrown down from the mow.

The Southwestern sheep region barn seems to merge barn design elements from more than one type. The form itself – a three-bay second level atop a full basement story – is consistent with the basement barn's organization. The styles and patterns of openings, however, take elements from the eastern Pennsylvania forebay barn, especially the louvered openings or windows in gable and/or eaves side which were popular in the late nineteenth century, precisely during the years of the sheep boom. The Southwestern Pennsylvania barn design employed these openings liberally, probably because they worked so well to provide the ventilation sheep needed above all else. A second affinity with the Pennsylvania forebay barn was a single, square-ish, central door in the eaves side. In Pennsylvania barns this would be located in the forebay. In either case, the

doors allowed for hay or straw to be thrown down to the animal yard.[78] Notably, the Caldwell atlas shows both forebay barns and basement barns with this feature.



Farm of John Maxwell, Hopewell Township, Washington County. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876). This shows a forebay barn with forebay-side central door.



Farm of John Davison, Hopewell Township, Washington County. From Caldwell's atlas. Though it is difficult to tell, this image suggests a basement barn with central door in the eaves on the side where the animal yard is located.

Washington County, ramp side. Datestone 1886. Site 802440. This basement barn has added ventilation along the upper eaves. The image on the right shows the eaves side.

Basement barn, eaves side, Washington County, late nineteenth century. Site 802201. Image on the right shows the ramp side.

Basement barn, lower eaves side showing hay door and small sheep door. Washington County, late nineteenth century. Site 802218

Basement barn, Washington County, late nineteenth century. Washington County site 802349. This example shows well the small sheep-sized doors.

Basement barn, Washington County, late nineteenth century. Site 802299.

Basement barn, Washington County, late nineteenth century. Site 802300.

Washington County, late nineteenth century. Site 802241.

Basement barn, Washington County, ramp side, late nineteenth century. Site 802375. Top: ramp side; bottom left: eave side; bottom right: gable side.

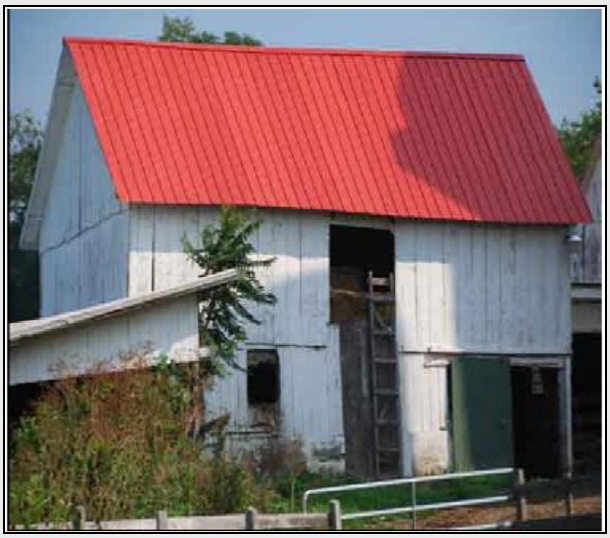
Washington County, showing siting. Site 802349.

Washington County, showing siting and screening of house by ornamental trees. Site 802329.

Washington County, aerial showing siting of house(center), barn (lower center), and windbreak. Site 802328.

Hay Barns, 1850-1890

Thomas Visser notes that in New England, occasionally hay barns were erected away from the main farmstead, to serve an outlying meadow. Hay barns, as their name implied, mainly stored hay, and their diagnostic feature was a large opening to admit the hay, usually located in the gable end at the peak, often with a protective hood projecting. Southwestern Pennsylvania hay barns typically had the opening and the hay hood, but most buildings that fieldworkers labeled "hay barns" also seemed to have animal quarters below, and most were located within the orbit of the main farmstead.



This is a good example of a hay barn, complete with hay. Washington County, late nineteenth century. Site 802014.

Granaries, 1850-1890

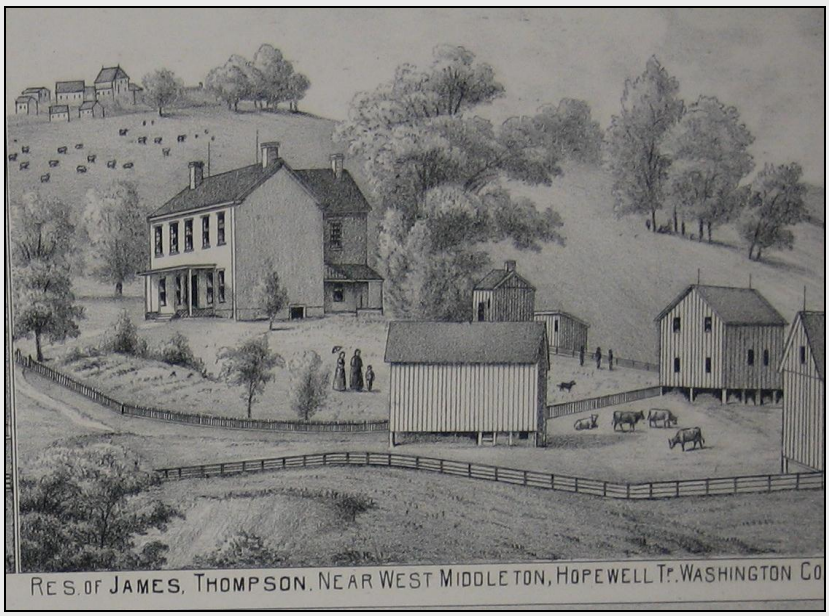
As mentioned above, granary is a structure devoted to storing threshed grain. Whether grown as a cash crop or for animal feed, small grains (principally wheat, oats, barley, and rye) were a valuable and highly vulnerable component of the diversified farm's product mix. So, secure storage for small grains has consistently been a priority. (Corn, another small grain, was stored in the ear in a specialized corn crib.)

Their typical characteristics include the following: wood construction; tight boarding, thus few if any windows; gable end pass doors and entry doors; interior bins, partitioned from one another; interior walkway. Very often, the granary was elevated off the ground, as a means of deterring rodents. Siting seems to have varied. In some cases, the granary

was sited away from the barn and closer to the farmhouse; in others, it was situated next to the barn.

The freestanding granary seems to have been quite common in the Southwest. Here, the Pennsylvania Barn, with its integral interior granary, was not as common a barn type as in the southeast and central portion of the state. The dating for granaries is extremely imprecise. There are dozens of granaries documented in Washington and Greene County survey work, and survey crews dated most to the late nineteenth and early twentieth centuries. This c. 1880 barn has a bankside outshed that bears the characteristics of a granary: tight boarding, access on gable end, above-ground elevation.

Barn with probable granary outshed, Washington County, c. 1880. Site 802520.



Among other buildings depicted here is a granary, center foreground. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876).

Springhouses, 1850-1890

The springhouse and its diagnostic features are described above. The need for springhouses continued into this period. Washington County farms in 1880 averaged 342 pounds of butter per year, just under the statewide average, so springhouses would be an important component in the farmstead. It seems that one particular springhouse configuration is quite common in the region. This is a two-level springhouse with gable end built into a bank. The second story level often has windows and what seems to be ample work space. Frequently there is a gable overhang to shade workers on the lower level. The door usually is in the lower gable end, but on the upper level it is in the eaves side. These buildings signify more than usually elaborate work space and suggest that these springhouses were used for more than simple storage.

Spring House, Residence of John Gillespie, Peters Township, Washington County. This depiction shows the characteristic willow tree, a moisture-loving plant that often appeared at the site of a spring house. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876).

Spring house, Washington County, late nineteenth century. Site 802506.

Spring House, Scott Township, Lawrence County, late nineteenth century. Site 073-SCO-003.

Spring house, Washington County, c. 1880. Site 802136.

Two level Springhouse, Greene County, late nineteenth century. Site 803147.

Spring house, Washington County, c. 1870. Site 802515.

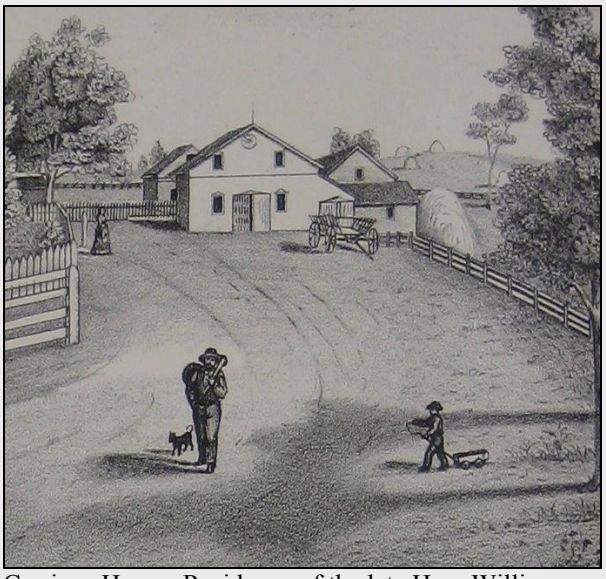
Spring House, Washington County, c. 1880. Site 802540.

Wash Houses, 1850-1890

The Washington County agricultural society visiting committee in 1870 described a wash house that had a "large fire place" plus a "very strong spring of pure crystal water" flowing through it. Churning and cheese making took place here. Buildings over a spring with two stories and a fireplace might be called wash houses. To date, no wash houses were positively identified in field work.

Carriage Houses, 1850-1890

During this prosperous period, carriage houses appeared on Southwestern Pennsylvania farmsteads. These buildings were mainly intended to house equipment for human transportation, and the horses which drew them. As such, they commanded a privileged place in the farmstead site plan, usually in proximity to the house. According to Thomas Visser, early ones were "distinguishable by their large hinged doors, few windows, and proximity to the dooryard."[79] A carriage house would not usually be as large as a barn, and it might sit on the same side of the road as the house; also, carriage houses not uncommonly had some ornamental architectural trim that would not always appear on a barn. Interiors (originals, that is) would have large stalls, and a hayloft above.



Carriage House, Residence of the late Hon. William Montgomery, Washington, PA. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876).

Carriage House, Washington County, 1880. Site 802510. This carriage house appeared to have ample lighting, and was sited between house and barn.

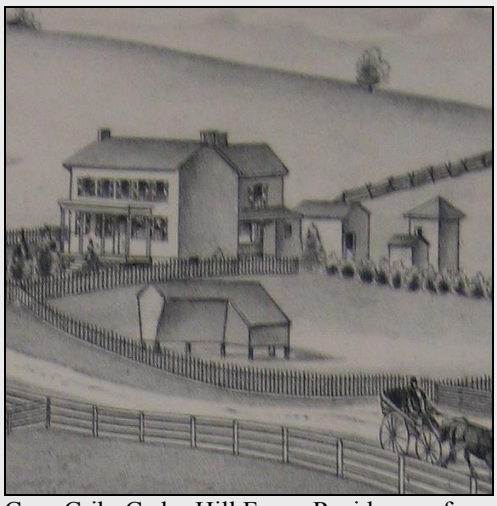
Carriage House, Washington County, c. 1870. Site 802001. This building appears in the Caldwell atlas, depicting James S. Buchanan's residence in Mount Pleasant Township.

Wool Rooms, 1850-1890

Visser notes that occasionally wool rooms are found above carriage houses in Vermont. Wool rooms could also be included in other buildings. For example, the Pennsylvania Agricultural Society Transactions reported in 1872 on a farm where the "grain house [is] well arranged for convenience; in the upper story has … wool stored."[80] Field work did not definitively note wool rooms, but a second inspection might uncover some. In general, wool storage facilities probably existed in varied buildings. Wool storage required a means to keep out mice and other creatures, so an elevated position and tight sealing would be signs of a possible wool room.

Corn Cribs, 1850-1890

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, though a few were depicted in the 1876 Caldwell atlas. "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. 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.[81] In Washington County, with larger than average per-farm corn production, this outbuilding was a frequent sight, as confirmed by illustrations from the 1876 Caldwell atlas. Field survey also documented numerous corn cribs, but they date only as far back as the turn of the twentieth century. These extant buildings can be assumed to be replacement buildings.



Corn Crib, Cedar Hill Farm, Residence of Margaret Caldwell and Daughters, Peters Township, Washington County Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876).

Corn Crib, Washington County. Site 802507. This is dated to about 1900.

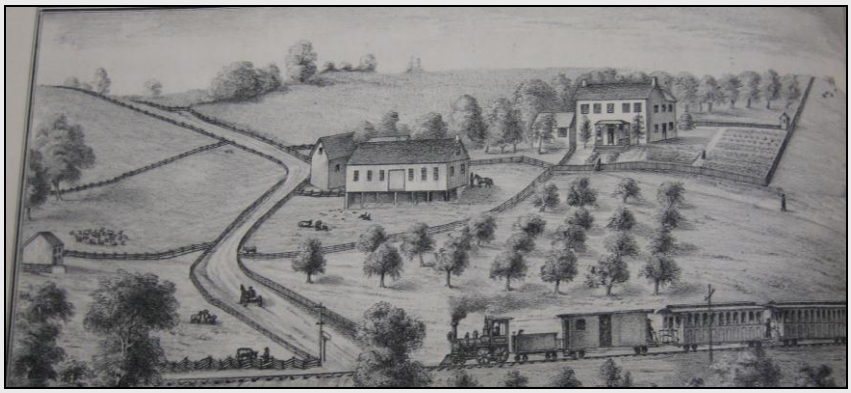
Smoke houses, 1850-1890

The smokehouse is a small structure, often with a square footprint, of frame or masonry, windowless, with facilities inside for smoking meat. These facilities usually consist of a hearth, and hooks or laths from which the smoking meats could be suspended. The smoke house was usually near the main house. Hams and bacon were smoked here in the late fall. Smoke houses should be considered a mixed-gender, community workspace, as most often neighborhood men and women cooperated at butchering time. The 1876 Caldwell Atlas of Washington County shows a few smoke houses (see illustration above, in corn crib section), but fewer than would be predicted. Given that Washington County farms raised more swine than the usual Pennsylvania farm, we might expect to find smoke houses on farmsteads. However, few survey forms recorded smoke houses. Tentatively, we may hypothesize that in this less Pennsylvania German area, foodways related to pork may have been less dominant than in central and eastern Pennsylvania. However, given the impact of Southern culture in the area, this is still a little puzzling. There is one very elaborate combination smoke house and ice house at a Greene County site, built by M. M. McClelland about 1873.

Landscape features, 1850-1890

Probably the late nineteenth century was the peak period for land clearance, though the number of farms would not peak for another decade or two. Farmstead layout seems to have developed a few characteristic features, mainly with respect to houses' and farm buildings' carefully-distanced relationship to public roadways. Pasture dominated over crop fields, and woodlots were small. Fencing was a very prominent landscape feature. Picturesque ideas about homestead landscape seem to have taken root in Washington County. Atlas depictions often give romantic homestead names for these places ("Mount Pleasant"; "Locust Hill"; "Evergreen Home"). Of features that were important in this period, those that survive most frequently are pasture, treelines, crop fields, pathways, and relationships among buildings and to the road. Much less likely to survive original fencing, orchards, homestead landscaping, historic ornamental plantings, and garden plots.

Pasture: By 1880, a very large proportion of the extreme Southwest was in pasture. It is difficult to say exactly how much, because Federal agricultural census statistics include pasture in two separate categories: the figure for "tilled acres" included "grass in rotation whether pasture or meadow," and in addition there was a separate category for permanent pasture lands. If we consider only the "permanent pasture," we find that statewide (on a per-farm basis) about 16 percent of the land was in permanent pasture, while in Washington County around 22 percent was in permanent pasture. In the other counties the percentage was more like the state average. The Caldwell atlas images clearly show expanses of pasture land extending right to the hilltops. Washington County historian Alfred Creigh noted in 1870 that "the country presents a rolling character… These hills are cultivated to the very tops…"[82] John Jaqueth, author of a 1938 "History of Sheep in Pennsylvania," noted that pasture "ground was so arranged as to take a piece of woodland into every field to shade [the sheep] from the sun."[83]



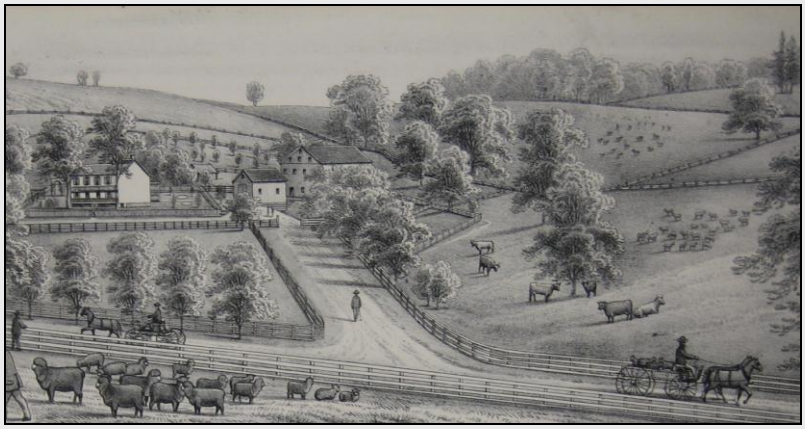
Residence of J. L. Patterson, Burgettstown, Washington County. This representative illustration shows key landscape features of the nineteenth century Washington County farm. To the left, three sheep pastures are divided by fences; in two of them, sheep are grazing. Individual trees left to grow in the pasture provide shade. In the center, the barns are surrounded by a fenced yard. Beyond this is another pasture. To the right, the house is situated centrally in relation to ornamental plantings, orchard, and garden. A woman is shown in the garden. The road is fenced entirely along its visible length. *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).

Pasture and treeline, Washington County. Site 802530. This photo shows a current pasture. Note that its sloping topography, treeline border, shade trees, and road continue historic features. Most fencing is gone.

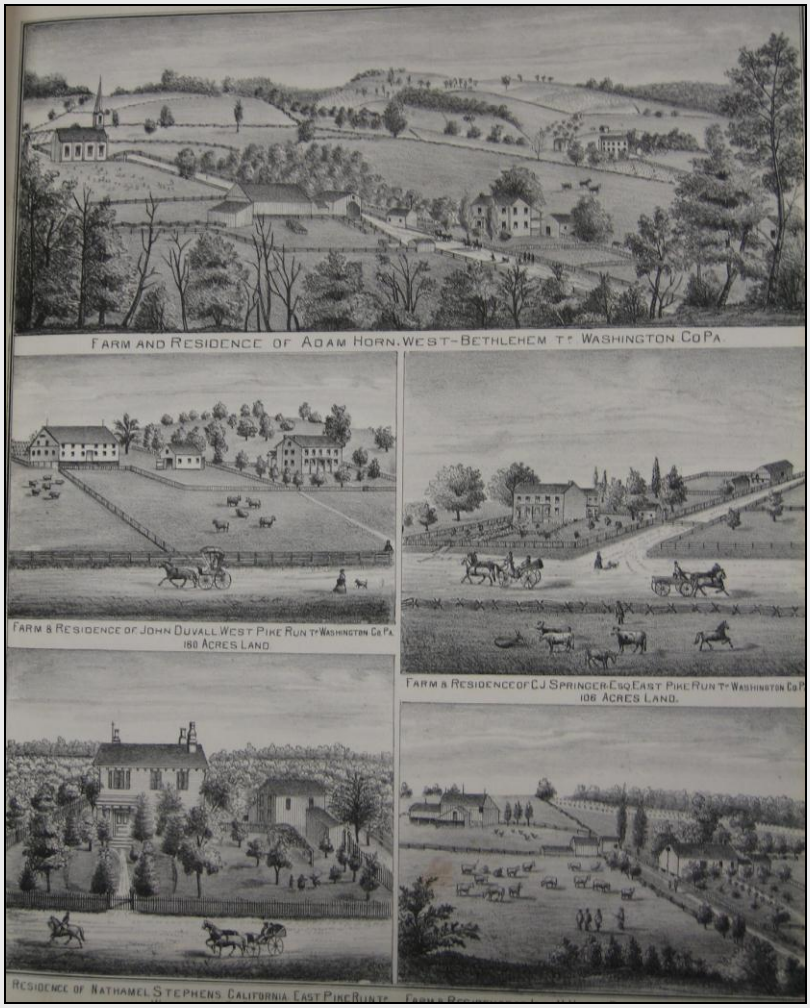
Pasture, treeline, shade tree, and fencing, Washington County. Site 802539.

Crop Field: Crop fields tended to be relatively small, between five and 20 acres, and irregularly shaped. They often would be sited on level bottom land. Their location and use often continues down to the present. See the engraving of James Hawkins's farm, below.

Relationship of Farm Buildings: A particularly interesting aspect of Southwestern Pennsylvania farm layout is the relationship of the farmstead to the road. A review of Caldwell's illustrations shows that (though there are exceptions) in general, the farm buildings are sited well away from the road. Access frequently was carefully designed to be limited. For example, a long, narrow path would lead to the house from the main road. The 1870s farm visiting committee noted that James W. Dickey's barn was "off some distance, in a suitable place…"[84]



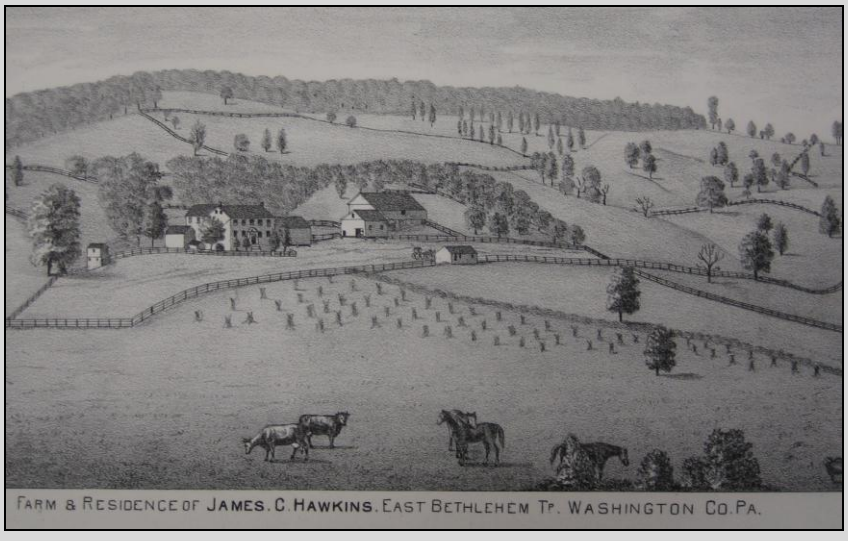
Residence of R. S. Caldwell, Buffalo, Hopewell Township, Washington County. Note the main road in foreground; wide fork leading toward farmstead; gated, narrowing path at farmstead entrance; path in front of farmstead is fenced off. *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).



This representative page from Caldwell's 1876 atlas of Washington County illustrates five farms. Note how the houses relate to the roadway. In most cases, while they do face the road, they are carefully set off from it. This distancing is achieved through several means. Fencing creates a physical separation from the roadway, and also encloses a large rectangular area, within which the house is sited towards the rear. In several cases, tree plantings screen the house visually. Narrow footpaths lead from the road to the house. This provides access, but also creates distance, for any visitor would have to move along a formal axis, one often flanked by trees. The sequential narrowing of the pathway also signals increasing exclusivity.

In this case, it is not even possible to visually identify a roadway passing by the farm. Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania (Condit, Ohio, 1876).

Nineteenth-century rural Washington County residents appear to have been interested in contemporary romantic-inspired landscaping ideas of the Victorian era. Curved pathways, circular flower beds, and ornamental plantings appear in many of Caldwell's illustrations, and a few remnants can be found even today.



Evergreen Home, Farm Residence of T. P. Vance, Cross Creek Township. *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876). This view implies that all paths in the picture are internal to the farm, since cattle roam un-fenced. Note the very narrow path to the house; clearly this is for pedestrians only. Ornamental plantings, dominated visually by evergreens, fill the fenced yard.

Ornamental trees and picket fencing, Washington County. Site 802056. Compare to "Evergreen Home."

A large shade and shelter tree located in front of this late nineteenth century house, Washington County. Site 802111. The apple tree in the foreground may be located at a former orchard site.

Farm lane, ornamental evergreens, fencing, and woodlot, Greene County. Site 803134.

Residence of W. G. Sphar, Allen Township, Washington County, c. 1876. This view shows an up to date house and landscaping. Note the resemblance the house at Washington County, site 802353, image above. Field work uncovered some sites where portions of pathways survive, and many instances where houses are actually obscured by plantings which would have originated as the tiny evergreens in Mr. Sphar's yard. *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).

N.G. Cook's residence, Washington County.

Washington County site 802001, contemporary aerial. Note curving paths, crop and pasture land, evergreens around the house, and carriage house where the road and pathway to house intersect. At site 802002 and site 802064 it appears little landscaping elements remain. At site 802003, the pathways to the house have changed, but the location of woodlots, crop field, and pasture remains essentially as depicted in the 1876 atlas. Also, there still are ornamental trees planted near the house. The quality of the digital atlas image was insufficient for inclusion here.

Now let us consider relationships of the other farmstead buildings to each other and to the road. For the most important of these – the main barn – its position vis-a-vis the roadway seems to have been a secondary consideration. As we have seen, orientation, shelter, and topography were more important than access from a road. The view of N. G. Cook's residence illustrates this. To be sure, some barns were located right on the road, usually so that wagon loads could enter on grade to the mow level. But this was not a dominant pattern. Note also the two willow trees standing guard at the farm entrance.[85]

The other farm outbuildings generally were clustered, sometimes in a linear pattern, more often irregularly. Topography doubtless accounts for some of the siting decisions. Siting for springhouses was inflexible. The privy, summer kitchen, ice house, or smoke house were sited within the house's orbit. The carriage house usually stood between house and barn, convenient to the roadway. Corn cribs, machine sheds, and granaries were in the barn's orbit. Sheep barns might be near the main barn, but could also be sited in an outlying pasture. Hay barns were also likely to be sited beyond the main farmstead.

At site 802001 in Washington County, substantial aspects of the farm layout have persisted over a hundred years, inferred through comparing the 1876 atlas view with present landscape. These features include pathways from road to house; tree plantings

around the house; siting of barn; location of carriage house where the road meets the pathway; and pasture and crop field.

Fencing: While of course the solid wooden "worm" and "post and rail" fences of the nineteenth century are long gone, fencing remains on the landscape, in diminished presence. Its function and location are all that remain; modern woven wire, barbed wire, and other fencing predominates. In some instances, horse farming has resulted in a sort of continuity, in that board fences are used on horse farms; see Washington County sites 802101 and 802102. A hierarchy of fencing prevailed, with picket fences around the house, post and rail fences by the barn, and "worm" fences in more distant places.

Woven wire pasture fence, Washington County. Site 802112.

Woven wire and board fence, Washington County. Site 802106.

These illustrations obviously do not document historic fencing from the period, but they do suggest that the use of fencing to delineate pastures has been continuous.

Treelines:

Washington County. Site 802136. Note treelines intact along road and between field, also the irregular shape of fields and pastures.

Washington County, pasture and treeline. Site 802154.

Orchards: Virtually every farm had an orchard in the nineteenth century. These have been among the most thoroughly effaced landscape features. Fruit trees are not long lived, and with the localization of fruit growing, small farm orchards became outmoded.

Relict orchard, Washington County. Site 802072.

Relict orchard, Washington County. Site 802372.

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Woodlots: Woodlots may be more extensive now than they were in the 19th century. In the late 1870s, one observer reported, "but one tenth of the area of Washington is forest land…. There is a home market for all the timber. Very little wood is used for fuel."[86]

Washington County, showing woodlot and crop field. Site 802572.

Drainage ditches: One of the farms visited by the agricultural society in 1874 had three hundred yards of drainage ditch lined with stone and clay.[87] Present day drainage ditches are plentiful but cannot be dated with certainty.

Cemeteries: Occasionally a private family cemetery can be found on the Southwestern Pennsylvania farm. For reasons of practicality or sentiment, some families chose burial grounds over church cemeteries. This represents practices that predate the nineteenth century movement to public cemeteries landscaped according to romantic-era precepts.

Family Cemetery, Greene County, nineteenth century. Site 803140.

1890-c. 1930: Industrialization and Agricultural Reorientation

Products, 1890-c. 1930

Around the turn of the twentieth century, several developments contributed to a rapid change in rural Southwestern Pennsylvania. By 1890, sheep numbers in the two counties had already declined noticeably, and thereafter the drop-off was marked. By 1925, there were only 222,000 sheep in the two counties combined; Greene had surpassed Washington, and in the latter county there were only 104,000 sheep, less than a quarter of the 1880 level. Washington and Greene Counties still produced by far the most sheep in the state (together they accounted for over half of the state total), but on a much more modest scale. Sheep farming was much reduced in Mercer and Lawrence Counties, though as late as 1920 the agricultural extension agent in Lawrence reported that there were still about 250 "sheep men" there. In the state as a whole, an even more pronounced decline occurred. The average Washington County farm now grazed a mere 24 sheep, compared with two for the average Pennsylvania farm.

What were the reasons for this dramatic shift? Several changes wrought an effect on the sheep grazing economy of Southwestern Pennsylvania. In the first place, global competition drove down prices and made sheep grazing unprofitable in Pennsylvania. The western United States, Australia, New Zealand, and South Africa raised high quality sheep (in some cases descended from Pennsylvania ancestors) far more cheaply than Pennsylvanians could. To make matters worse, the protective tariff was eliminated for good in 1894. Locally, industrialization changed land use both directly and indirectly. Extractive industries, particularly coal mining and oil and gas extraction, expanded into both Washington and Greene counties on a much larger scale than before. These had both direct and indirect effects on agriculture. Direct effects included actual conversion of land uses from agriculture to mining; compromises to water quality; and the siphoning off of farm labor. Indirect impacts also played an important role. For example, during this time period large corporations bought up subsurface rights to huge tracts in Greene and Washington Counties.[88] On June 25, 1896, the National Stockman and Farmer (published in Pittsburgh) reported “About all the money coming into hands of farmers is oil rentals. Produce not commanding enough generally to repay for expense of raising

…" According to historical geographer Richard Beach, many farmers received royalties, and were able to substitute that income for sheep-grazing revenues. So, because of payments, land was either given over to other agricultural uses, or allowed to revert to scrub. Figures for Greene County show that by 1915, non-local investors had claimed subsurface rights on 200,000 acres of land in the county – a staggering two thirds of the entire county land area.[89] This impact was indirect, because not all of this land was actually developed for mining purposes. In fact, even as late as 1930 over 90 percent of Greene County's land area was in agriculture. Modest up-ticks in wool and sheep production, (for example around 1905 and again in the 1920s) gave momentary boosts to the farm economy. [90]

Historical geographer Richard Beach argues that another factor in the decline of sheep raising was that grazers became discouraged by the depredations of unruly dogs. A 1913 article in the Pennsylvania Farmer blamed the "miner's dog" and high prices for coal land for the decline in Southwestern Pennsylvania sheep husbandry.[91] Figures cited by dog opponents suggest significant losses, but there also seems to have been an element of class and ethnic prejudice involved, so it is difficult to sort out the actual impact in light of the obvious hostility between industrial and agricultural camps.

Other elements of Southwestern Pennsylvania's agricultural economy declined too. Wheat acreage dropped along with western Pennsylvania wheat farming in general; what remained of wheat farming within the state shifted geographically to the southeast. Grain corn also declined relative to the state averages, on a per-farm basis. Hay production remained about the same, slightly above statewide averages on a per-farm basis. Oats production also remained more or less at state levels. A new crop was silage corn, as yet raised in small amounts compared with the total farm output, but nonetheless an important contributor to dairy cow productivity. In some parts of the state, potatoes assumed increased importance near mining and industrial towns, but in the Southwest conditions were not suitable: "this is not potato country," wrote a Greene County correspondent.[92]

If they wanted to keep on farming, Southwestern Pennsylvania rural families had little choice but to combine sheep raising with other enterprises. Their options were limited.

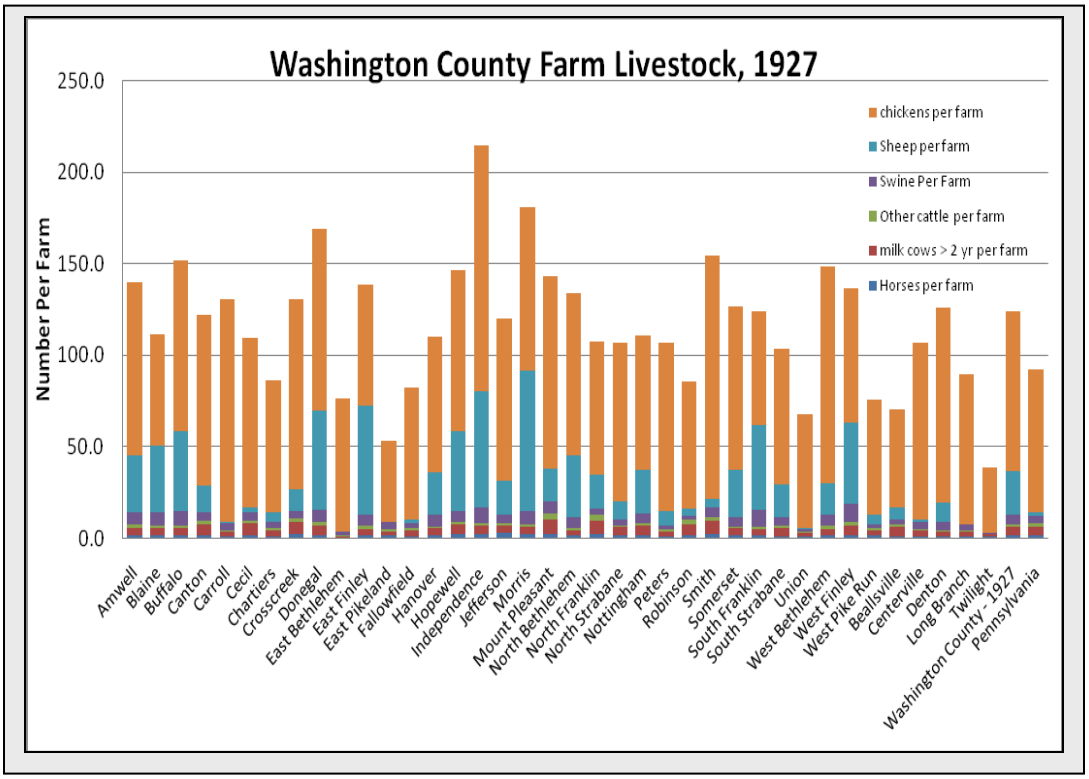
It appears, for example, that they took advantage of nearby markets for fresh poultry meat and eggs. From being about at the state average in 1880, Southwestern farms in 1927 raised slightly more birds on a per-farm basis (87) than the state average (78). Some townships, such as Independence and Smith in Washington County, significantly exceeded statewide averages. These two townships probably catered to the mining population in coal towns such as nearby Avella and Burgettstown. G. Wayne Smith, historian of Greene County, reports that in the 1880s onward, the county was also "a large supplier of poultry for the Pittsburgh market." At holiday time, turkeys were "driven [to a warehouse] near Waynesburg in droves of 500 to 600 from different parts of the county," having been "collected at farm houses … and driven … over the public roads like sheep." Washington and Greene Counties continued to produce more swine than average on a per-farm basis, (though per-farm numbers did decline between 1880 and 1927 along with the rest of Pennsylvania).[93] Again, it is plausible to assume a link with local markets.

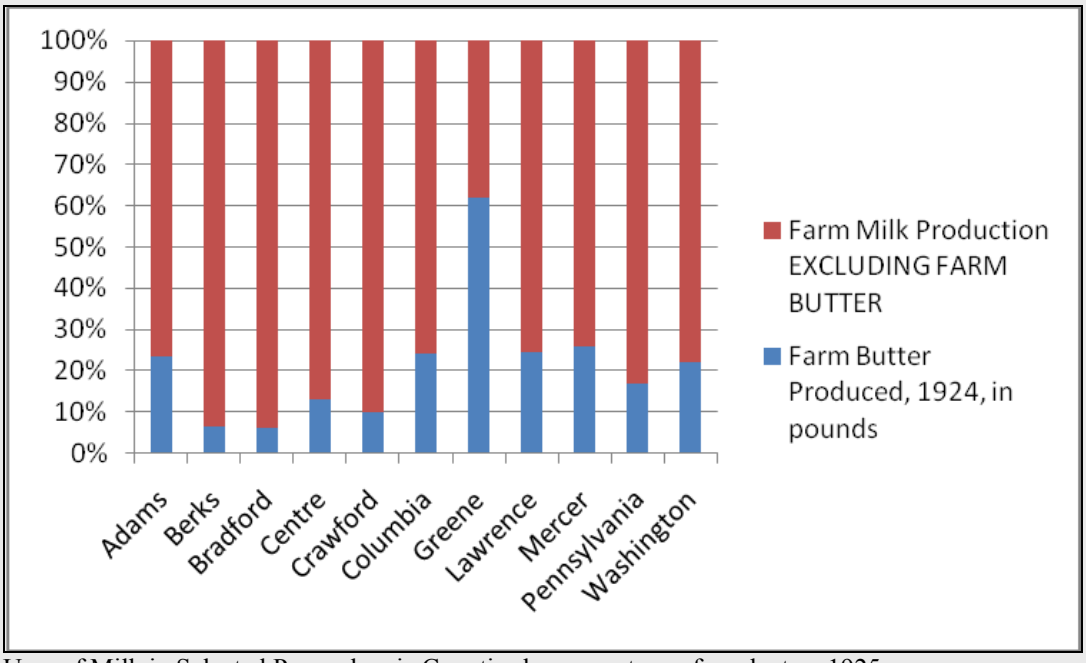
The Pennsylvania Department of Agriculture Annual Report noted in 1902 that Washington County farmers were beginning to pay more attention to fruit.[94] Indeed, with 66 bearing apple trees per farm, Washington County in 1927 had double the average number for the state. Other sources report peaches and plums.[95] As before, blackberries, raspberries, blueberries, and other small fruits were widely grown or gathered.

The family garden continued to hold a crucial place in the farm household economy. Probably much the same crops were grown and put by as in previous generations.

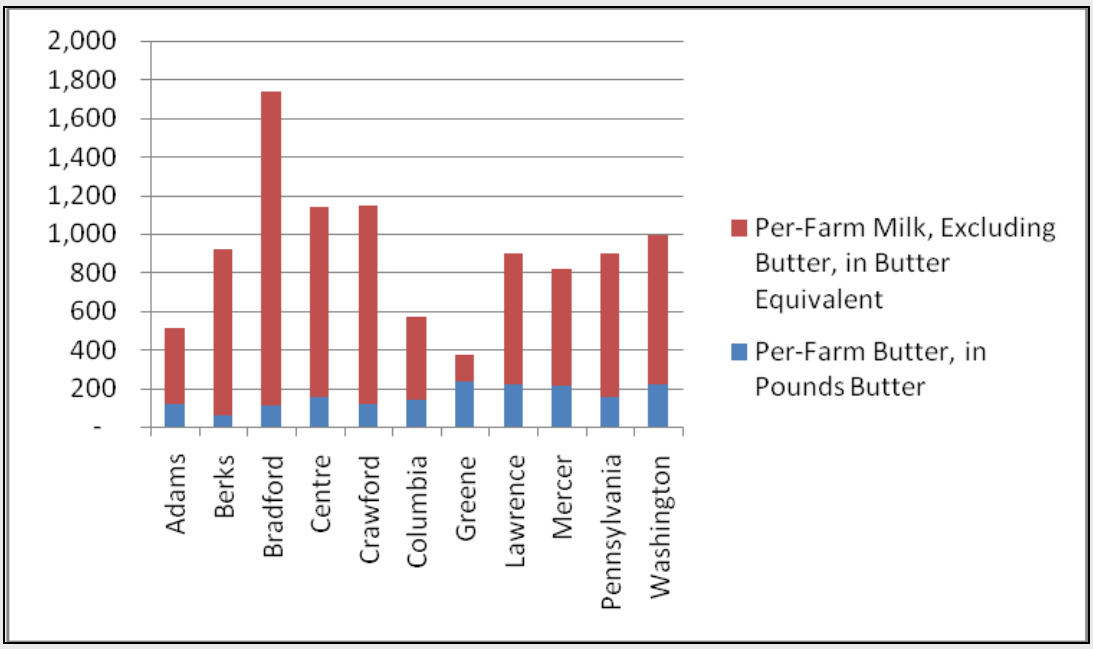
The *Twentieth Century History of Washington County* noted that by 1910 dairying was "an important business near Washington and Monongahela City and near the other towns and mining settlements. Milk is hauled several miles and sold to the local consumer. This industry has become a very important one in the county." In the state as a whole, 60 percent of milk produced on farms in 1890 had been used to make butter on the farm; by 1924, farm-made butter accounted for about 20-30 percent of milk produced. Washington County followed these trends in the proportion of milk sold in fluid form, and in addition maintained its above-average production that had been established in the late nineteenth century.[96] In Mercer and Lawrence a similar trend prevailed.

In Greene County, an opposite trend held. In fact, dairy production declined there, from 4.5 million gallons in 1889 to 2.7 million gallons in 1924. More surprising, per-cow milk production also declined, from an average of 463 gallons to just 359 (the state average in 1924 was 502), and farm-made butter declined too. It seems probable that either the figures were incorrectly recorded, or that a decline can be attributed to Greene County's poor competitive position in this period, when the "milk shed" for other, better situated areas was expanding because of improved transportation and more reasonable topography. A 1925 soil survey of the county noted that "Little attention is given to dairying in the county" even though "the hill farms are well suited to dairy farming …" It attributed this discrepancy to the terrain and poor roads: "the roads are almost impassable in the winter and spring, [so] it would at times be difficult to deliver the milk to shipping points. On some farms butter is made and stored until the roads dry up enough to be passable."[97] An evocative photo in a county history showed two women proudly posing with their churns in front of a springhouse.





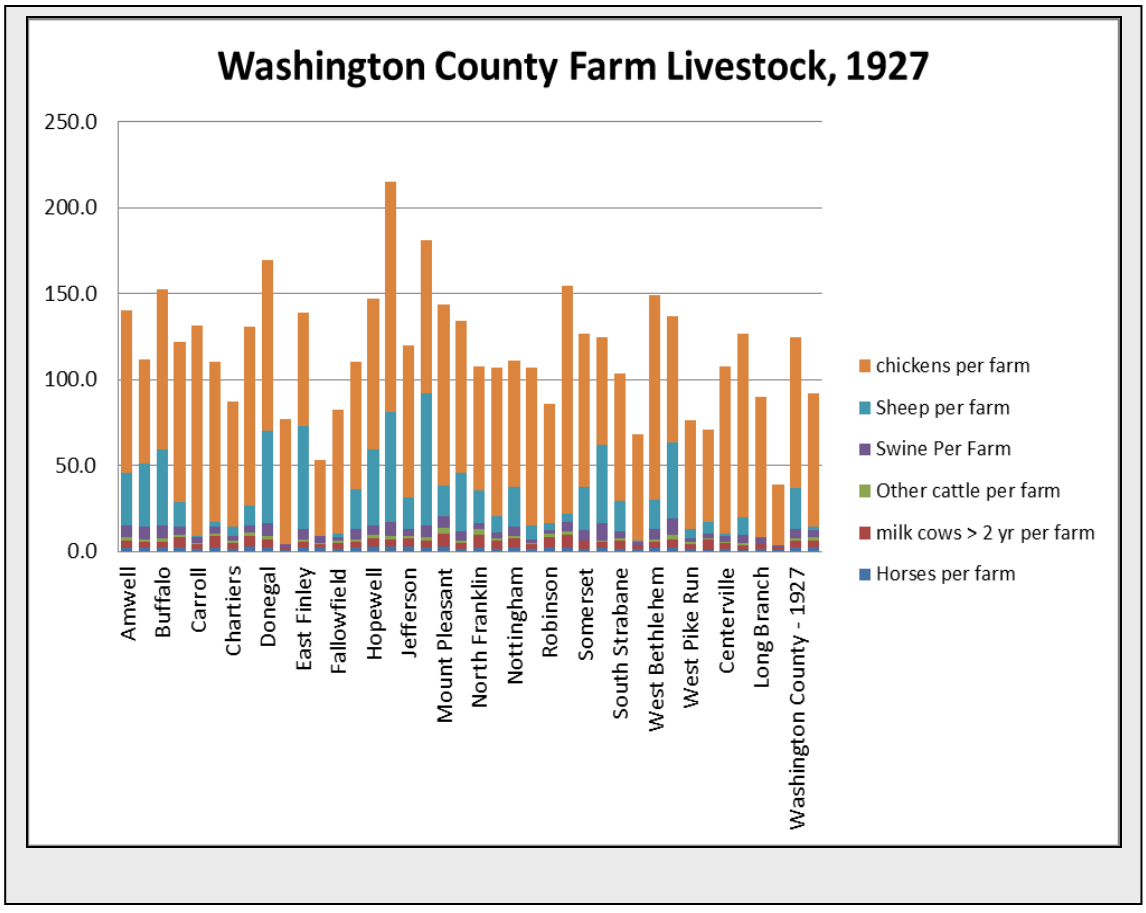
Uses of Milk in Selected Pennsylvania Counties by percentage of product, c. 1925.



Uses of Milk in Selected Pennsylvania Counties, by pounds per farm, c. 1925.

Labor and Land Tenure, 1890-c. 1930

Farm tenancy rates decreased during this period, that is, a greater proportion of farms in Pennsylvania was owner-occupied and operated in 1930 than in 1890. This might seem counterintuitive, since the intervening years were mainly marked by agricultural depression. To explain the apparent anomaly, we should bear in mind several factors. First, the total number of farms was dropping, so even if the percentage of tenants was dropping, agriculture was not necessarily thriving. Second, Lewis C. Gray, eminent agricultural economist and historian, attributed the shift in proportion of owner-occupied farms to increased industrialization and urbanization, which provided more opportunities for small-scale farming, off-farm income, and part-time farming in New England and the mid-Atlantic, where the trend prevailed. Cities and industries essentially allowed farmers to hold onto their land, either by farming it or by taking off-farm employment nearby.[98]



Between about 1895 and 1915, oil, coal, and gas leases began to supply appreciable income to Southwestern Pennsylvania farming families. No definitive estimate of income has been located in research, but more than one observer blamed royalties for the low state of agriculture in the region.[99] They sometimes implied that farm families collected their checks, sat back, and neglected the land. Yet, the figures don't seem to bear out this charge. During this period, it seems that comparatively little land was actually taken out of production; the two counties still ranked among the state's highest in terms of percentage of land under cultivation.[100] On the other hand, the agricultural census figures do suggest that there was less agricultural activity overall, because no substitute of similar scale offset the huge decline in sheep raising. Jobs were opening up in coal mining and in the oil and gas business, so it is very likely that some rural people took off-farm employment to supplement dwindling farm income. More research is needed to clarify the nature of this important shift in labor patterns. For now it seems valid to say that farm families in the Southwest made their living by combining market farming, subsistence farming, off-farm employment, and occasional lease or royalty payments. It would be interesting to know if the farming was taken over by women while men went off to work in the mines and oil rigs. This did occur in the bituminous mining regions further east, so it is not unlikely. In Mercer and Lawrence, other extractive industries (such as limestone quarrying) and manufacturing (the tin plate industry for example) played a similar role to gas and oil in Washington and Greene.

Not only the content but the nature of farm labor changed. Many processes were transformed by technology. Machinery and other technologies (like electricity) assumed a greater role in farming and in rural life. About half of farms surveyed in the 1927 census had telephones, and about a third had radios. Electrification came to parts of the region by the 1930s, bringing lights and other amenities. Nonetheless statewide only 24 percent of Pennsylvania's farms were electrified in 1935, and the rural cooperative movement was absent from the Southwest.[101] Extension agents encouraged rural families to use electricity to pump water and run farm machinery. Though electricity only slowly became a major factor in typical farm life, its impact among the families who acquired it was profound.

Almost all farm families in the four counties had an automobile or a truck, or both, by 1927. The auto significantly reshaped work patterns in many families, as it came into use for marketing, visiting, errand running, and the like. There is little direct evidence from the region itself, but other work has shown this. Women, for example, often found themselves in a supporting role, driving the car to run errands, fetching parts or supplies, and so on.[102]

Mechanization of field work also continued. However, it is important to note that even in the twentieth century this process was gradual and uneven. Tractor ownership ranged from average in Washington and Lawrence Counties, to slightly below average in Mercer County, to well below average in Greene County. (Statewide the average was around 15 percent.) Much work was done with horse power or stationary engines even to the mid-twentieth century. There were limits to technological adoption, including lack of financial resources, but also topography. The Greene County soil survey, completed in 1921, noted that "many slopes are cultivated which are too steep for the use of labor-saving farm implements. Sleds are used by many farmers for hauling their hay and grain from many of the fields." Surprisingly, even the cradle was in use on some of the rougher slopes. "Tractors are not used." [103] In Mercer and Lawrence, where topography was not as formidable, tractor ownership was slightly higher, but still not universal by any means.

Most farm labor was still done mainly by family members, probably with occasional hired help. The 1921 Greene County soil survey said that "a large percentage of the farmers get along without any hired labor, except exchange at threshing time."[104] Oral histories from the 1970s (documenting the 1920s, 30s, and 40s) suggest that subsistence work – the family competency -- was still very important. Family members pitched in to complete virtually every type of farm task. One Washington County woman, Jeannette Hamilton, born around 1910, said of her mother:

> She'd hoe corn, then at dinnertime she'd grab us up, and she'd grab up a chicken and cut off its head and get dinner, and go out again until bedtime…. My sister and I, we went out and worked in the fields, drove the horses and the binder, pitched the sheaves. Many, many a day I've done that….When we were married, we did everything here: we butchered and made our cider; we did everything. We

> went to the store for sugar and flour and that kind of thing, but the rest of the stuff we made.

Her husband joined in:

> We would cure that pork here, eight to ten hogs, every winter. Dry-cure it. That was our meat. All summer we ate dried pork that was cured. We cured the shoulders and the hams and sides. The rest got into sausage and lard. We rendered the lard out of them hogs, and that was the shortening for baking.[105]

It is very likely that opportunities for off-farm labor for men resulted in the women taking on more farm work. Little direct evidence has yet come to light about this, but studies in the 1930s and 1940s documented large numbers of "part-time" farms.[106]

Buildings and Landscapes, 1890-c. 1930

In general, the repertoire of farm buildings during this period reflected the agricultural patterns of the period. Since crop patterns emphasized hay, oats, and feed corn, hay barns, granaries, and corncribs were common. The continuation of sheep raising (even if diminished) was reflected in sheep houses and multipurpose barns, and in extensive pasture and hay land. Increased attention to dairying took form in the occasional silo, corncribs, and re-worked barn basements. (Milk houses mainly came later.) This was the peak time for horse-power farming and stationary engines, so machinery storage became commonplace. Poultry housing also became more common. Documentary sources hint at a powerful role for subsistence activity, and buildings show this still more clearly. Most spring houses and summer kitchens documented in field survey work date not to the nineteenth century, but to the twentieth. Geographer Richard Beach states that the sheep barn was located close to the farm house in this period because of predator dogs.[107]

Houses, 1890-c. 1930

Relatively little new housing appeared during this period of economic downturn. Among those that were built, the foursquare was the most popular. The foursquare is a classic

twentieth century design, variants of which appeared all over the U.S. between about 1900 and 1940. As its name implies, the building is roughly cubic in shape, with pyramidal roof and often a dormer projecting from one roof face. Often a porch spans part or all of the front elevation. Designs for foursquare houses were available from mail order companies such as Sears, Roebuck, and they were also easily imitated. Most are balloon frame structures. The foursquare represents standardized, industrialized home building and style.[108]

Foursquare house, Greene County, early twentieth century. Site 802375.

Spring Houses, 1890-c. 1930

Interestingly, quite a few new spring houses were built in the twentieth century throughout the region.[109] A fine example of a rock-face concrete block springhouse can be seen at site 073-SCO-005 in Lawrence County, a beveled concrete block springhouse at 073-SCO-007, and a regular block springhouse at 073-WAS-003. There is another rockface block springhouse in Mercer County at 085-WIL-004 and a hollow tile one at 095-WIL-007. What explains this late persistence? Census data indicate that the counties, where these buildings were found, had lower than average fluid milk production; they also had higher than average farm butter production, coming in at over 200 pounds per farm. This is not a high number, and it is lower than nineteenth century figures. Nonetheless, this amount is roughly what Joan Jensen estimated would supply a

farm household in the mid-nineteenth century, so it is plausible that these twentieth-century springhouses were an important facet of subsistence strategies, particularly considering that farm income in the 1920s was threatened by gathering agricultural depression and decline in the sheep industry. Perhaps, since industrial employment was more easily obtained by men, women's work assumed greater importance on the farm.

Rockface concrete block spring house, Washington County, c. 1920-1930. Site 802413.

Frame spring house with glazed tile block lower story, Washington County site 802417, c. 1920-1930.

Frame spring house, Washington County, c. 1900-1920. Site 802356.

Spring House, Scott Township, Lawrence County, a fine example of a rockface concrete block spring house with beveled corner quoins. Site 073-SCO-005.

Spring House, East Lackawannock Township, Mercer County. Site 085-WIL-007. The material is most likely hollow tile, a popular mass-produced building material of the period.

Root Cellars, 1890-c. 1930

A root cellar is an excavated and covered area that stores potatoes, turnips, carrots, cabbages, and other crops. Sometimes barns had root cellars, but these small detached structures were for household use. In this period when household subsistence gained ever greater importance, a root cellar was a very useful space.

Stone root cellar, Washington County, 1890. Site 802491.

Summer Kitchens, 1890-c. 1930

A "summer kitchen" is a small free standing structure usually sited just to the rear of the main house. Architectural characteristics of the summer kitchen include: frame construction, often of a higher level of finish than would be found in rougher outbuildings; stove or set-kettle; tables; ample windows for lighting; human-scaled doors, sometimes paneled and usually with knobs (as opposed to mere latches)—thus signaling that this was mainly a building for human work and occupancy. As its name implies, it contains facilities for cooking and other food preparation. The standard assumption about these buildings is that they functioned to remove heat and especially messy tasks from the main house. While this explanation is logical, it is mostly untested. In many parts of Pennsylvania, for example, detached kitchens appeared in two distinct periods and seem to have served two different purposes. Early ones (c. 1790-1820) appeared most often on the properties of artisans and tavern keepers, suggesting a function related to those occupations; they also provided work space in an era of very small houses. A later wave in the late nineteenth and early twentieth century removed heavy food processing (but not always everyday cooking) from the main house. The later wave coincided with the elaboration of the farm family's "competency." The very term "summer kitchen" did not seem to come into common use until the mid-nineteenth century.[110] It is quite possible that 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 nineteenth century onward, did create considerable heat and took up space in the middle of a room, unlike its open-hearth predecessor. Simultaneously, heating stoves 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, and the extreme expression of this was the summer kitchen. There is some evidence that people actually moved the cook stove into the main house for the winter, and into the summer kitchen for the summer.[111] The summer kitchen should also be interpreted as a reflection of the increasingly complex subsistence work, done mostly by women, in this period.[112] Overall, most summer kitchens are likely to date to the very end of the nineteenth century onward. Some historians suggest that families actually ate meals in the summer kitchen in summertime.

In Washington County, documented summer kitchens mostly date to the late nineteenth and early twentieth century.[113] Summer kitchens also appear in Mercer and Lawrence Counties.

Summer kitchen, Washington County, c. 1890-1900. Site 802247.

Summer kitchen, Washington County, c. 1900-1920. Site 802509.

Summer kitchen, Washington County, c. 1890-1900. Site 802516.

Bake Ovens, 1890-c. 1930

The outdoor bake oven is a rare structure in the area, but a few survive. These testify to the ongoing importance of subsistence activities and women's work.

Outdoor bake oven, Washington County. Site 802252.

Barns, 1890-c. 1930

After the barn building boom of the late nineteenth century, it appears that farms in the area continued to use the barns built during that era, in some cases adapting them to new production patterns. For example, at Washington County site 802546 a barn was adapted for poultry production. In general, remarks made about barn function for the prior period still hold for this one. Given the shrinkage of agriculture, these older barns must have been more than adequate in most cases. The basement barn was the overwhelming choice, though a few ground-level barns were scattered in the region.

Basement barn adapted for poultry, Washington County, c. 1930. Site 802546.

Center-gable basement barn, Washington County, early twentieth century. Site 802539.

Basement barn with eaves side shed roof extension, Washington County, c. 1890. Site 802542.

Gable entry bank barn: The Gable front bank barn (Thomas Visser's term, also called gable-entry banked barn by geographer Allan Noble) reflected both the rise of dairying and increasing cost of labor. Cows, manure, granary, and occasionally roots (for feed) would be situated on the ground floor. The stalls or stanchions were usually arranged lengthwise (i.e. parallel to the roof ridge), in two rows flanking a central aisle (cows usually faced outward, but in some barns inward). On the upper level, hay and machinery were stored. A large gable-end entry sometimes provided easy access, while gravity aided feeding hay to the stables below.[114]

Gable-entry bank barn, Washington County, late nineteenth century. Site 802668.

Gable-entry bank barn, Washington County, late nineteenth century. Site 802670.

Appalachian Meadow Barn: Allen G. Noble has discussed a barn type he calls the "Appalachian Meadow barn."[115] This is a small barn, usually "rectangular, vertical sided, and painted." It has a small door in the gable end, and often a hay door in the gable peak. Noble reports that this barn has not been studied, and that its function seems to vary. If it serves for hay storage, he notes, it is often isolated in a meadow location. The barn in Greene County (at the right) fits the description well, and resembles the photo Noble provides in his book.

Appalachian meadow barn, Greene County, twentieth century. Site 802684. See also Greene County, site 802866.

Sheep Barns, 1890-c. 1930

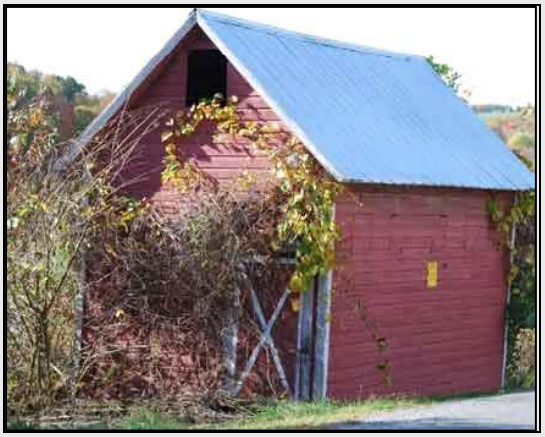
Sheep barns continued to be built even during this period of retrenchment. Their basic characteristics did not vary significantly from the earlier period.

Sheep barn with glazed tile block foundation, Washington County, c. 1925. Site 802400.

Granaries, 1890-c. 1930

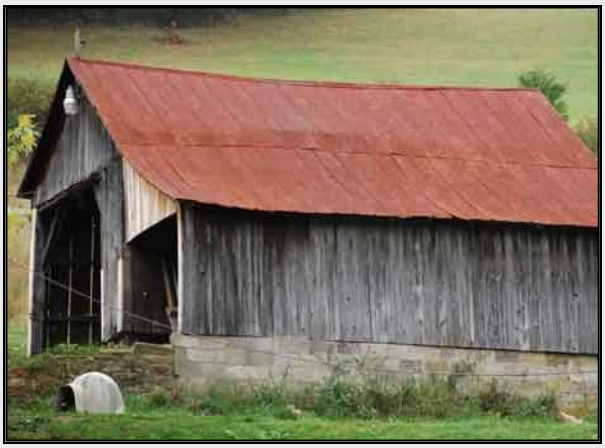
Grain growing continued more or less at the same levels as in prior periods, so granaries also continued in use. Examples from this period can be found at many sites.

Granary, Washington County, c. 1910-1920. Site 802526.



Granary, Washington County, c. 1930. Site 802545.

Carriage Houses, 1890-1930



Carriage House, Washington County, c. 1910-1930. Site 802526.

This period saw a transition from horse drawn transport to the auto. Nevertheless carriage houses would have predominated up to at least 1920. As before, these buildings were mainly intended to house equipment for human transportation, and the horses which drew them. As such, they commanded a privileged place in the farmstead site plan, usually in proximity to the house. According to Thomas Visser, early ones were "distinguishable by their large hinged doors, few windows, and proximity to the dooryard."[116] A carriage house would not usually be as large as a barn, and it might sit on the same side of the road as the house; also, carriage houses not uncommonly had some ornamental architectural trim that would not always appear on a barn. Interiors (originals, that is) would have large stalls and a hayloft above. In the sheep regions, it should be

kept in mind that the loft may have furnished storage for wool. Later examples may have been converted to garages.

Carriage House, Greene County, c. 1910-1930. Site 802808.

Carriage House, Greene County, c. 1890-1910. Site 802817.

Carriage House, Greene County, a nice early twentieth century rockface block example. Site 802838. There is also a nice, dated carriage house, 1925, at site 802359.

Carriage house, Washington County, dated 1925. Site 802359.

Corn Cribs, 1890-c. 1930

The description of corn cribs supplied for the earlier period applies to this one, too. Many more survive from this period. They were made of standard milled cribbing, and often were incorporated into machinery sheds. The region did not raise a great deal of corn in comparison with other counties in the state, but nonetheless the crop needed protection.

Corn crib, Washington County, c. 1930. Site 802509.

Machine shed and corn crib combination, Greene County, c.1880-1900. Site 802807.

Machine Sheds, 1890-c. 1930

Machinery was not as predominant as in other regions, so machine sheds in the sheep region tended to be small in scale and basic in function.

Machine Shed, Greene County, c. 1930. Site 802807.

Privies, 1890-c. 1930

These "necessary" buildings were virtually universal even into the twentieth century.

Privy, Greene County, c. 1930. Site 802801.

Privy, Greene County, c. 1930. Site 802801.

Hog Houses (Pigsties, Pig Pens), 1890-c. 1930

Hog House, Greene County, c. 1920. Site 802802.

Poultry house, Greene County, c. 1920-30. Site 802815.

Hogs were raised for household consumption and also occasionally for sale to the coal patch towns. The proximity of markets helps to explain why Southwestern farms continued to raise more hogs, on an average, than farms elsewhere in the state. Facilities for them were small in scale.

Poultry Houses, 1890-c. 1930

As the local history notes, poultry became slightly more important as coal-town and oil-rig markets developed. A typical farm in the region might have seven or eight dozen birds, accommodated in small poultry houses. These houses would normally be sited close to the main house, because poultry raising work at this scale of operation was still

typically done by women and children. Brooder houses are uncommon, suggesting that perhaps the scale was not large enough to warrant it; chicks could be kept in the kitchen. These houses would be for layers.

Poultry house, Greene County, c. 1920-30. Site 802808.

Poultry House, Greene County, c. 1890-1910. Site 802802.

Hay Barns, 1890-c. 1930

The Greene County soil survey of 1921 reported that most of the hay was stacked in the field and either fed directly from the stack or hauled to the barn in winter when needed. The author concluded, "It seems to be the best way of handling it on the steep slopes," though quality was compromised.[117] Hay barns, if erected, would normally be sited near the meadow.

Hay barn, Greene County, c. 1920-30. Site 802813.

Landscape features, 1890-c. 1930

Landscape features in this period probably began to show signs of fraying, but the fundamental features continued from the previous era. Pasture was still very prominent and wood lots small. Fencing was important, though by now a shift to wood-and-wire fencing was beginning. Crop fields were still irregularly shaped and relatively small. A few homesteads had windbreaks or ornamental evergreens, but these were not common. Orchards were very common but have all but disappeared.

Crop fields and treelines, Washington County. Site 802545.

Drainage ditch, Washington County. Site 802545.

Pasture, wire and wood fencing, gate, sentinel trees, Greene County. Site 803148.

Pasture, woodlot, fencing, Greene County. Site 803144.

1930-1960: Crisis and Decline: Land Use Shifts and Further Agricultural Adjustments

Products, 1930-1960

In the mid-1960s, a report on the local economy concluded: "The agriculture of Greene County is in trouble."[118] This was less the case in Washington County, but overall, between 1930 and 1960, it was an accurate characterization of agriculture in the Southwest. The same was true of Mercer and Lawrence Counties. The Great Depression hit farmers hard, and the Southwest was no exception. In the ensuing decades all counties lost rural population and whatever precarious competitive edge they might have enjoyed eroded badly. For all, sheep raising had lost much of its viability. Especially in the two Southwestern counties, local topography was very unsuited to mechanized farming, which became the norm during this period. In any case, erosion had taken its toll. Competition made it extremely difficult for local farmers in every agricultural sector; in the region, other areas met local dairy, egg, and poultry needs more effectively,

and from the nation and world, grain and livestock products flooded markets everywhere, making it very hard for farmers on marginal soils with steep, hilly ground to make a living. In Mercer and Lawrence Counties, the predominant types of farming were those the agricultural economists called "abnormal" and "general," while the second most predominant were dairy farms. "Abnormal" farms were primarily part-time farms in which the operator spent 150 or more days off the farm.[119]

The impact of oil, gas, and coal extraction compounded the difficulties in Washington and Greene, and industrial complexes did the same in Mercer and Lawrence. For example, farm water supplies were compromised, both in quantity and quality. The Washington county agricultural extension agent reported in 1960 that "With the development of the coal mining industry, farm water supplies have been lost entirely or seriously depleted. Wells and springs have gone dry. Not only these sources have been lost, but streams are being polluted by pumping mine water into them. Livestock will not drink from heavily polluted streams."[120] Nonetheless even as late as 1954, three-quarters of the land in Greene County was in farms, a high percentage. Probably much of this land was devoted to non-intensive uses, or even allowed to lie fallow, and to production that was near subsistence levels. Some land was taken out of production and converted to game lands; the state game commission bought up many farms in western Greene County.[121]

Nevertheless a few commercial farms managed to keep on operating. A report from the Greene County Planning Commission in 1958 noted that beef cattle and, "more recently," dairy cattle had been raised. With the rise of mining communities in the eastern portion of the county, markets opened up for dairy and poultry. The dairy portion of farm products sold in the county increased from 23 in 1940 to 35 in 1954.[122] There was an increase in the sheep population between 1950 and 1960, as prices rose. Lamb replaced wool as the main sheep product.[123] Immigrant populations were accustomed to eating lamb, especially for Christian holidays, and eventually the sheep farmers learned to cater to this market.

Acreage of grain corn, oats, and potatoes all dropped drastically by 1950, while hay acreage also declined but not so steeply. The number of bearing-age apple trees in

Greene County went from 176,000 in 1890 to a mere 25,000 in 1950, and a similar decline was reported in Washington County (207,000 to 61,000). The numbers of cattle, including milk cows, increased, reflecting stepped-up dairying activity. While horse numbers of course declined with the advent of gas power, there were still nearly two horses per farm as late as 1950. As mentioned before, sheep numbers dwindled to total about 100,000 by 1950, this time with the majority being in Greene County. Poultry numbers increased in Washington County, but declined in Greene by 1950.[124] In Mercer and Lawrence Counties, similar trends held, with possibly an even greater relative decline in crop production.

Labor and Land Tenure, 1930-1960

In many if not most farm families, the males worked in local extractive industries at least part of the year. This was particularly true in Greene County, which in 1950 ranked No. 2 in the state in the percentage of part-time farms (28).[125] While off-farm work may have been available to women, it is more likely that they were the ones responsible for many day to day farming operations. A 1938 survey found that women and children together accounted for over half the days of labor performed on part-time farms, concentrating on livestock care and gardening.[126] Farm income accounted for about 18 percent of household income, with off-farm employment bringing in 75 percent and other sources (pensions, rents, board, and direct relief) the remainder. The farms surveyed were small and explicitly determined to be "part-time farms."[127] Another study, however, found that among all farm operators, off farm employment doubled in the World War II period. By 1950, in Greene County fully half of farm operators worked off the farm 100 or more days per year.[128] The study did not estimate the role of off-farm work for owners of larger farms.

In 1950, Mercer and Lawrence Counties had mechanized along with the remainder of the state, but Washington and Greene County farms were under-mechanized relative to the rest of the state. Only a quarter of the farms in Greene County had tractors, and half of those in Washington County; compared with over sixty percent statewide. Only two percent of Greene County farms had silos, compared with 17 in Washington and 25

statewide. This shows the relative influence of dairying in the Southwest, especially where Greene County was concerned. The number of automobiles in Greene County actually declined between 1950 and 1954, and the number of trucks increased. Varner concluded that families had to choose one or the other. Notably, the number of tractors went from 739 in 1950 to 1229 in 1954. This is a remarkable sign of a rapid and rather late transition away from horse power.

During the Second World War, labor problems pressed heavily as they did elsewhere. Competition for workers from nearby steel mills, a pipeline project, and federal housing construction made farmers anxious. Skilled shearers were in particularly short supply. The local extension office had enough clout to obtain draft deferments for quite a few young farm men. Meanwhile, women invested extra effort in Victory Gardens.[129] Throughout the period, the availability of work in the mines, oil fields, and (in Mercer and Lawrence Counties) a huge TNT plant attracted workers away from farms.[130]

By 1950, both Washington and Greene had tenancy rates right around the statewide average, i.e., 20 percent. In both counties, tenancy had declined since 1910.[131]

Buildings and Landscapes, 1930-1960

Houses, 1930-1960

Electrification came to more parts of the state in this period. Washington, Mercer and Lawrence gained, but Greene County lagged behind. By 1950, three quarters of Greene County farms had electricity (as opposed to over 90 percent statewide), and two thirds had mechanical refrigeration (as opposed to nearly 80 percent statewide). Only 17 percent had central heating (compared with nearly half statewide).[132] These technological introductions, rather than any fundamental stylistic shifts, characterized domestic architectural change in the period, since few houses were dated to this period in the field survey work.

Privies, 1930-1960

In 1950, only 30 percent of Pennsylvania's farms had indoor flush toilets, and only 33 percent had hot and cold running water. [133]

Privy, Washington County. Site 802438.

Privy, Greene County. Site 802806.

Barns, 1930-1960

A Greene County report noted that there was an "absence of suitable dairy barns" owing to lack of financial resources to build or even to convert existing barns.[134] During this period, the basement barn continued to be popular. However, farm architecture as well as other farm operations were influenced by mechanization, standardization, and industrialization. Field survey work did document a number of twentieth century barns, many of which were built of new materials to new designs. These barns have been put into several different classifications by scholars Thomas Visser and Allen G. Noble. Their classification systems are cross-cutting and analytically confusing. Here I attempt to explain them, and to propose a reasonable compromise.

Visser uses the term "ground-level stable barn" and Allen G. Noble uses the term "Wisconsin dairy barn" to refer to a twentieth century barn that was built all on one level, often with original concrete flooring and concrete block foundation walls. Two rows of stanchions lined the eaves sides, and multiple large windows along the eaves sides

admitted ample light. The story above (really more like a story and a half, since the ground floor story had low ceilings) functioned as a hayloft and had a large hay door and hay hood in the gable end. Ground-level stable barns could be built with gambrel roofs or a Gothic (also called "round roof" or "rainbow roof")[135]. This latter roof type is usually a pointed arch or sometimes rounded. It was made possible by new truss systems, sometimes prefabricated, and it allowed more hay room than even a gambrel roof. Some companies in the Midwest offered complete designs and materials for these barns. They were designed to be specialized, i.e., to house and feed dairy cattle. These barns could be large or small, (though Noble suggests most were at least 36 feet wide and as long as 100 feet). Most of the ground-level stable barns observed in field survey were relatively small. They thus were well suited to the modest numbers of animals on Southwestern Pennsylvania farms. The term "ground-level stable barn" seems to capture the type best, since it is descriptive and does not limit the range to the Wisconsin version, which tended to be large.

Ground level stable barn, Washington County. Site 802609.

A related type has similar features (concrete block construction, gable end door, lengthwise arrangement of stanchions, upper level hay storage, concrete flooring) but has multi-level access. Allen G. Noble uses the term "raised round-roof barn" (46) for these structures. The features that differentiate this type from the ground-level stable barn are multi-level access, and the large hay door on the upper eaves side, which is designed to admit the high hay wagons of the mid-twentieth century. They also almost always have

round or rainbow roofs, but to call a barn by a roof type is problematic, because many types of barns either had round roofs or were later covered with round roofs. Perhaps the term “raised round-roof stable barn” would best capture its diagnostic characteristics.

Regardless of specific configuration, these barns all represent rationalizing, specializing, industrializing agriculture. Their very materials—mass produced and marketed—came out of an industrialized building system. The barns themselves were marketed by corporations. Companies such as Sears, for example, sold "kit" barns, as did lumber concerns like Weyerhauser.

Raised round-roof stable barn, Washington County. Site 802685.

Silos, 1930-1960

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

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (usually from a tier of doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors). Early silos were unloaded by hand, from the top. The land-grant establishment published many "how-to" brochures aimed at helping farmers build their own silos of wood or concrete. Because masonry is more durable and cleaner, it became the norm. Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910. Galvanized iron was mentioned by I. F. Hall in a 1929 study of farm buildings.[136] A 1918 Pennsylvania State College circular (No. 72) mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks as silo construction materials.[137] Alan Noble, in *Wood, Brick, and Stone*, argues for a sequence in roof types, from gable to cone to hip to dome to hemisphere.[138] In the Southwestern counties, silos are common, mainly dating to the mid-twentieth century when dairying became more general.

Wood stave silo, Washington County, c. 1935. Site 802244.

Metal silo, Washington County, c. 1930. Site 802305.

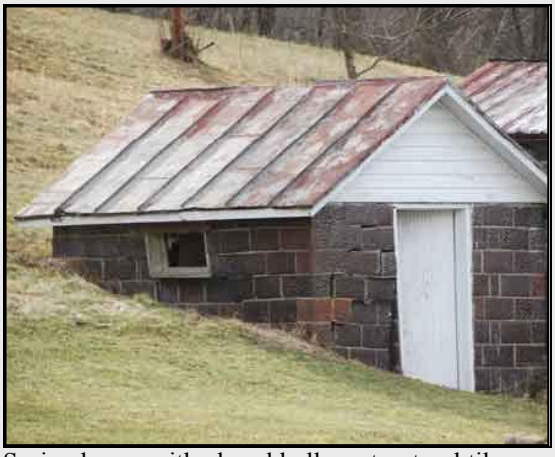
Garages, 1930-1960

As autos and trucks definitively replaced horse transport, the garage replaced the carriage house for good. Sited near the house and sometimes given a relatively high degree of finish, the garage marked the importance of the automobile in rural life.

Garage, Greene County, c. 1930. Site 802801.

Springhouses, 1930-1960

Spring houses continued to be built and used right up through the end of this period. New materials replaced the earlier stone, brick, and wood. Some were built with hollow structural clay tile, a material produced in abundance in the Pennsylvania Southwest, and very much a product of the region's industrial history. Hollow structural clay tile block became popular late in the nineteenth century.



Spring house with glazed hollow structural tile, Greene County, c. 1930. Site 803150.

Manufactured using an extrusion process, it possessed varied qualities including different degrees of porosity and extreme hardness. Structural clay tile was used in load-bearing walls on small buildings; farm outbuildings were good candidates. Facing tiles with glazed, matted, or mottled surfaces became popular in the 1920s. A major manufacturer was the National Fireproofing Company of Pittsburgh. Companies that produced drainage tile often also produced building block.[139] Rock face concrete block continued in use, and cinder block appeared also.

This spring house seems to have been built from leftover firebrick, a kind of hollow structural tile. Washington County, c. 1935. Site 802474.

Springhouse, Washington County, 1952. Site 802359.

Workshops, 1930-1960

Agricultural reformers touted the desirability of farm workshops. A few farm workshops were recorded in the survey.

Workshop, Greene County, c. 1930. Site 802807.

Milk Houses, 1930-1960

The milk house was another major new form on the twentieth-century dairy farm. It wasn't a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities.[140] New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late nineteenth and early twentieth centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk.[141] It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In

Pennsylvania, these regulations took effect relatively late in the Southwest. The milk house was one product of these new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the "agricultural establishment" on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Milk house, Washington County, c. 1930. Site 802356.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10x13 feet up to around 12x20 feet. Interior plans for a 10x13 milk house with ell (No. 909, "capacity 20 to 30 head market milk") show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room[142] with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (No. 1337) had a churn, butter worker, ripening vat, and refrigerator, and another (No. 1339) had quarters for workers. Another small, 12x14, one-room milk house (No. 1341, see illustration) was designed for "butter making by

hand" for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7x9, had a concrete foundation with a sunken vat for cooling cans of milk.[143] All of these plans had sloping floors with drains, and provision for ventilation and light. After about 1950, milk houses were sometimes altered to accommodate bulk tanks.

As they turned to dairying, farm families in the Southwestern counties erected milk houses. Now they are commonplace.

Root cellars, 1930-1960

Root cellars, like springhouses, continued to be built, used, and maintained during these depression years.

Root Cellar, Washington County, c. 1940. Site 802264.

Root Cellar, Washington County, c. 1940. Site 802282.

Corn Cribs, 1930-1960

The corn crib continued as a standard building on Southwestern Pennsylvania farms. Milled lumber gave them a more uniform look.

Corn Crib, Washington County, c. 1940. Site 802377.

Poultry Houses, 1930-1960

Poultry houses in the region continued to reflect the modest scale of poultry raising in the region.

Poultry house, Washington County, c. 1945. Site 802215.

Hog Houses, 1930-1960

As before, hog houses were not very common. Their scale, siting, and layout did not change much, but building materials did change.

Hog house, Washington County, c. 1935. Site 802412.

Landscape Features, 1930-1960

Pasture: Varner reported that in Greene County, almost two thirds of the farmland was in permanent pasture in 1954, with only 20 percent in cropland. The proportion of idle land increased significantly between 1945 and 1954, while the proportion of woodland remained constant at less than ten percent.[144] With the increasing numbers of cattle, pasture appearance may have changed in areas where cattle were raised. This is because sheep tend to graze everything very closely, while cattle will leave certain bushes and plants that are not palatable for them. An important post-1940 development was the introduction of multi-flora rose, at first thought to be a promising "live" fence for sheep. In a story too often repeated, it rapidly became a pestiferous weed.[145]

Crop fields: Crop fields were small and irregularly shaped, and relatively few compared with pasture lands. Corn for feed and silage took up a greater acreage, oats decreased as horses disappeared, and wheat decreased from already low levels.

Contour Plowing and Strip Cropping: Contour plowing arranges furrows along contours of slopes, thus reducing runoff. The Farm Journal in August 1935[146] defined strip cropping as "a form of contour farming in which strips of densely-growing, erosion-resistant crops, such as alfalfa, lespedeza, sweet clover, Sudan grass, timothy, and the

small grains, are alternated across the slope with strips of cultivated row crops. The strips of erosion-resistant crops check the speed of the runoff, filter out the soil being carried by the water, and cause the land to absorb moisture." The article also noted that strips demanded less labor than square fields and "permit more efficient use of machinery." They also fit well with terraces. The 1941 Lawrence County agricultural extension report says that strip cropping is in use.

This resulted in longer narrower fields, and destruction of some fence lines. The extension reports for northwestern Pennsylvania do not mention this often; in fact, they sometimes noted a pronounced lack of interest in contour plowing, because of relatively flat topography. However, 1930s aerials do show fields with long, narrow strips. It is not clear if these were crop strips or something else. Certainly the region had drainage problems even if soil erosion was not thought to be serious. Even today, there does not appear to be a great deal of contour plowed land, so the likelihood that historic crop fields survive may be greater than in hilly areas[147].

Strip cropping, Washington County. Site 802007.

Strip cropping in Washington Township, Lawrence County. Site 005017.

Woodlots: Wood lots were not very important in this region. Aerials from the late 1930s show how sparse they were; compared with modern aerials for the same sites, it seems that woodlands cover a much greater acreage now than they used to. In the 1939 aerial, a few early contour and strip cropping areas are visible, as is an orchard area (center left portion of image). Some tree lines and fields remain intact nearly seventy years later.

1939 Aerial photograph, Washington County. Penn Pilot.

Utility poles and wires: With the coming of electricity, utility poles appeared.

Fencing: Geographer Richard Beach notes several implications for fencing types in the new agricultural regime. As sheep for meat replaced sheep for wool, fencing changed, because wool breed sheep tended to be taller and go over fences, while mutton breeds tended to burrow under. Thus in the mid-twentieth century, sheep fencing shifted from woven wire with one strand of barbed wire at the top, to woven wire with a board or strand of barbed wire at the bottom. As sheep in general gave way to dairy animals, woven wire became the standard fencing because it was adaptable to more kinds of livestock.[148]

Woven wire fence, Washington County. Site 802681.

Barbed wire fence, Washington County. Site 802685.

Tree Lines, Windbreaks: In the early to mid-twentieth century, it became popular to create tree plantings for both ornamental and protective purposes. The illustration below is a fine example.

Tree line/windbreak, Washington County. Site 802673.

Stone walls: A few stone walls were recorded in field survey work. Most seem to be retaining walls created for ornamental and practical purposes. They do not appear as field dividers.

Stone retaining wall, Washington County. Site 802672.

Ponds: In the mid-twentieth century, supposedly hundreds of farm ponds were built in the region. This was part of a broader enthusiasm for ponds in the prosperous postwar period. Ponds helped to insure a farm's physical plant by providing a ready water source for the fire fighter if needed; they provided for recreation as well. In the Southwest, they took on additional importance because they addressed water quality issues created by

mining and oil drilling. A. R. Varner reported in 1958 that over 300 ponds had been built in Greene County alone.[149] However, field survey work recorded very few ponds.

Oil or Gas Well Head:

Most of these will date after 1960, but they were an increasing presence by the mid-twentieth century.

Oil well head, Mercer County.

Drainage Ditches: As before, drainage ditches provided an important function in channeling water.

Drainage ditch, Washington County. Site 802873.

Property Types and Registration Requirements – Criterion A, Pennsylvania

This statement outlines considerations for Pennsylvania as a whole.

Farmstead

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

Farm

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

Historic Agricultural District

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

A. Criterion A, Agriculture

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

General Considerations for Pennsylvania as a Whole

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

Historic Patterns of Agricultural Production

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

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

-AND-

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

Social Organization of Agricultural Practice

Historic production patterns are necessary but not sufficient to determine eligibility. Social organization of agricultural practice had a profound influence on the landscape that must be recognized. Labor, land tenure, mechanization, and cultural practice should be considered. For example, in the Central Limestone Valleys, share tenancy was an important and enduring practice that significantly influenced the architecture and landscape of farmsteads, farms, and farm districts. In the Northern Tier, conversely, high rates of owner-occupation lent a different appearance to the landscape. The level of mechanization was related to labor practices, and also shaped the landscape through field patterns and architectural accommodation (or lack thereof) for machinery storage. Insofar as cultural factors influenced agricultural production or practice, they should be taken into account in determining the eligibility of farmsteads, farms, and farm districts. For example, Pennsylvania German food ways may have influenced agricultural production patterns and hence architectural forms; Yankee/Yorker families brought with them the English barn (which, because of its organization, shaped farming practice) and the penchant for classical revival styling.[150]

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.[151] Conversely, in low-mechanization areas such as the Northern Tier, these facilities will likely be less visible.
> >
> > 3 b) labor organization: Patterns of collective neighborhood labor may be present; for example, a butcher house might be located near the road. For early phases of agricultural development, we would not expect to find overt architectural accommodation for hired laborers. But in the wage-labor era, those expressions would range from accommodations on the farm (rooms over springhouses, wings of houses) to purpose-built migrant housing. Mechanization could affect labor organization because it eliminates workers. Architectural and landscape elements that illustrate

patterns of labor organization should be assessed for significance (with respect to agriculture) based on the level of clarity, intensity, and chronological consistency with which they show labor patterns. For example, if a c. 1850 farm house has a c.1880 workers' wing with back stair and no access to the family living area, 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.

Property Types and Registration Requirements — Criterion A, Agriculture: Registration Requirements for the Southwestern Pennsylvania Diversified Agriculture and Sheep Raising Region

To be considered significant for Agriculture under Criterion A for the period 1830-1850, "Diversified Agriculture and the Rise of Sheep Raising," a **farmstead** should include, at a minimum, a farmhouse typical for the region (for these purposes the "region" means Southwestern Pennsylvania); barn or outbuildings related to general livestock raising, subsistence, or crop production;[152] and architectural evidence of sheep raising. This last could include a larger barn with modifications for sheep (as outlined in the narrative) or a separate sheep barn. A **farm** should have pasture, cropland, or woodlot. A **historic agricultural district** would need a collection of farms representing these features.

To be considered significant for Agriculture under Criterion A for the period 1850-about 1890, "the Civil War Peak Period,"

> A **farmstead** should have a farm house typical of the period and place, or an older house showing appropriate modifications; and architectural evidence of sheep raising in the form either of a southwestern Pennsylvania style basement barn, or a separate sheep barn. It should also have architectural representation of crop

farming and subsistence activity as shown in buildings such as springhouses, granaries, corncribs, and the like. A **farm** should have landscape evidence of sheep raising especially pasture land. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for Agriculture for the period 1890-about 1930, "Industrialization and Agricultural Reorientation,"

A **farmstead** should include a house typical of the time and place or an older house showing appropriate modifications; a barn showing 20th century reorientation to dairying or modernizing types and materials; evidence of sheep culture (sheep barn, hay barn); evidence of mechanization (carriage house, machine shed); and at least one outbuilding from the period which shows intensified subsistence activity (spring house, summer kitchen, root cellar). A **farm** should have these features plus cropland, pasture land, or woodlot. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture under Criterion A for the period 1930-1960, "Crisis and Decline: Land Use Shifts and Further Agricultural Adjustments,"

A **farmstead** need not have a house which dates precisely from this period, but should have a barn dating from the period, and evidence of agricultural shifts to dairying, such as a silo or milk house. It should also represent crop farming and subsistence activity. A **farm** should have cropland and woodlot; pasture is less important. Orchards are desirable but not required. A **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for representing the major agricultural changes in the Southwestern Pennsylvania Historic Agricultural Region from 1850-1960,

A **farmstead** should have architectural evidence of the major shifts over time. A 19th century house, late 19th or early 20th century sheep barn, and ground level stable barn, for instance, would effectively portray a shift from sheep to dairying. In all cases, however, diversification should also be represented in the form of outbuildings related to contributing enterprises – spring houses, corn cribs, granaries, root cellars, and the like. A **farm** should have cropland, pasture, and tree lines or woodlots. Orchards are desirable but not required. A **historic agricultural** district should have a more or less contiguous collection of farms representing these features.

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

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

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".[153]

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 ...".[154] 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.[155] 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-nineteenth century vernacular farmhouse that was Colonial Revitalized in the early twentieth 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).

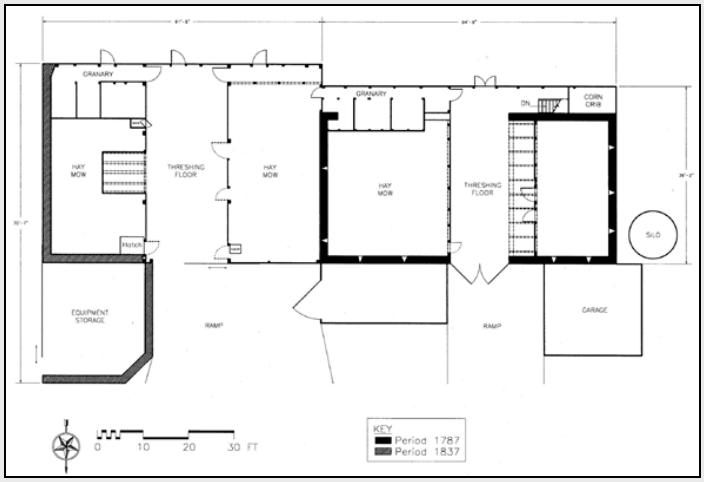
Ornament on Hodge Barn, Centre County.

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.

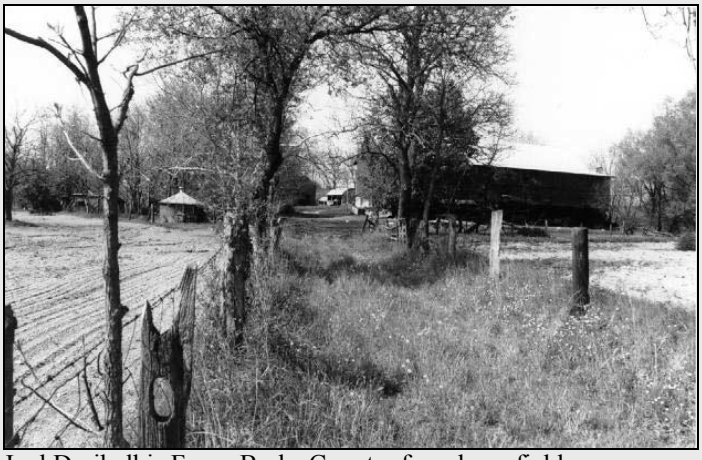
Example 4: Smokehouse, Tulpehocken Manor, Lebanon County, late eighteenth century. Most examples of architectural significance will likely be larger buildings such as barns, but this smokehouse (in Lebanon County) is an example of a smaller building which might qualify because of its masonry (which qualifies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

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 nineteenth century does not mean the site sprang from the ground full blown… (Catts 2001-2002: 145)." Often, buildings were moved or reused over time (Beaudry 2001-2002: 130). In some cases, buildings were never even documented in the historical record or the documentation is contradictory (Garrison 1996: 24, 32). These data can provide important information on how farmers responded to the larger movements and innovations in agricultural practice for their regions, documenting both the degree to which farmers followed the latest prescriptions, and the amount of time it took for these ideas to diffuse from other areas (Beaudry 2001-2002: 130; Catts 2001-2002: 145).

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

Agricultural Production

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

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

Labor and Land Tenure

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

Aside from providing important information on individual farms and individual ownership, archaeology can provide important information on the effects of larger events on the farming culture. For example, during the Napoleonic Wars in Europe, European demand for American goods (including agricultural products) rose dramatically. With

this in mind, archaeology can document the effects of this heightened demand on agricultural production and practice in each agricultural region in Pennsylvania (Garman et al. 1985: 73). In addition, the Civil War was another event that had a dramatic impact on agricultural society. Besides raids, forage, and simply the movement of large bodies of troops across the agricultural landscape, this event occasioned a tremendous loss of life and shortage of manpower after the war. In the southern United States, this loss of manpower hastened the mechanization of many farms. Archaeology could demonstrate how this loss of manpower was manifested in the landscape and material culture of Pennsylvania's agricultural regions (Catts 2001-2002: 149).

Labor and land tenure also ties into several major research themes within historical archaeology, including status (e.g. Miller 1980), class (e.g. McGuire and Walker 1999), and ethnicity (e.g. Stine 1990). In terms of status, the archaeology of Pennsylvania farms can provide important information about the ways in which farmers displayed their status. For instance, investigations in New Jersey suggest that farmers chose to display their status by improving their agricultural holdings, as opposed to participating in the consumer culture (Friedlander 1991: 27). Ceramic and glass artifacts indicated a status position that was not in keeping with the farmer's status as derived from the historic record. Tenant farmers, on the other hand, may have more fully embraced consumer culture since there was little use in improving structures and land that they did not own (Rotman and Nassaney 1997: 56). Archaeology within Pennsylvania's agricultural regions could provide important information on the general applicability of these findings.

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

Closely related to the above themes of ethnicity, status, and role, is the concept of class. Class has variously been defined as "the relationship of a social group to the means of production" (McGwire and Walker 1999: 160), as a description of a fixed position in society, and as a relative measure of the relationships between different social groups (Wurst and Fitts 1999: 1). According to some archaeologists, however, regardless of the

definition of class, its role has not been sufficiently examined in the archaeological record; the historical archaeology of class has been "meager." (Wurst and Fitts, 1999). Therefore, this concept may yield important information for the study of Pennsylvania agriculture. For example, in New York state, archaeologists examined the manifestations of class between servants and their employers in Binghamton and found that artifact types and locations can represent different classes within the same property and that mixed assemblages may be the result of different class structures on the same property (Wurst 1999: 17). In agricultural regions of Pennsylvania where migrant labor was important, this type of study could produce important information on the differences between the owners and the workers. In addition, Wurst (1999: 13) demonstrated how, at a rural tannery, the owners minimized the material cultural differences between themselves and the workers.

Cultural Patterns

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

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

Faunal Studies

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

Conclusion

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

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Statement of Integrity

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

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."[156]

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."[157]

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"[158] 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."[159] 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."[160] For significance with respect to agriculture, a farmstead or farm must have contributed to a working farm for its period of significance. The presence of historic landscape features related to agriculture is a key aspect of Integrity of Association. Close attention should be paid to identifying intact or remnant features. For example, are crop field size, scale, shape, and patterns are retained from the pre-contour stripping era? Are there remnants of early woodlots or sugar bushes? Is there evidence of land use such as pasturing? A majority of farms in a historic agricultural district should have a continued association with agriculture for the period of significance. To ensure Integrity of Association, the inevitable "intrusions" should be kept to a minimum. However, a historic agricultural district could conceivably have a high percentage of noncontributing properties relative to an urban district. For example, a concentrated 25-acre subdivision with 50 noncontributing houses might be contained within a 1,000-acre historic agricultural district with fifty contributing farms. Even though technically, the subdivision elevates the percentage of noncontributing properties, it does not reduce Integrity of Association, because it is such a small percentage relative to the continuously farmed (and contributing) acreage in the remainder of the district land area.

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Note: this bibliography is specifically for the Southwestern region. A more extensive general bibliography is available with the other Pennsylvania Agricultural History Project narratives online.

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Endnotes

[1] Richard Beach, *Two Hundred Years of Sheep Raising in the Upper Ohio Area, with Special Reference to Washington County, Pennsylvania* (Monongahela, PA: Bicentennial Commission of Washington County, PA), 1976, 8.
[2] E. Willard Miller, ed., *A Geography of Pennsylvania* (University Park, PA: Penn State Press, 1995), 69, 70, 71.
[3] Beach, *Two Hundred Years of Sheep Raising*, 9.
[4] Charles Trego, *A Geography of Pennsylvania for the use of schools and private families.* Philadelphia: Key and Biddle, 1835, 364; Rebecca Eaton, *A Geography of Pennsylvania, for the Use of Schools, and Private Families.* Philadelphia: Key and Biddle, 1835, 202; "Trade of Greene County," *Hazard's Register*, April 1833, 239; Trego, 253.
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[6] *Hazard's Register,* February 23, 1828, p 128.
[7] Trego, *A Geography of Pennsylvania ,* 364; Sherman Day, *Historical Collections of Pennsylvania, (*Philadelphia: G.W. Gorton, 1843), 658, 664; U. S. Patent Office Annual Report, 1849, 256.
[8] This discussion is based on Stevenson Fletcher, *Pennsylvania Agriculture and Rural Life*, volume 2, pp 265-268. Fletcher says that Pennsylvania sheep numbers peaked in 1850 at 1.8 million, but this is incorrect as the 1870 figures are higher, as are figures from the Civil War years. See also Robert Leslie Jones, *History of Agriculture in Ohio* (Kent, Ohio, 1983), especially pp 140-155; James Westfall Thompson, *History of Livestock Raising in the United States;* and Paul Wallace Gates, *Agriculture and the Civil War*, 158-9; Beach, *Two Hundred Years of Sheep Raising,* 5.
[9] *Hazard's Register*, Volume XI, April 1833, 239.
[10] For a perceptive discussion of this point, see Jan Albers, *Hands on the Land: a History of the Vermont Landscape*, 144-149. A rental agreement is described in *Hazard's Register* volume XIV (August 1835), 125; *Special Report on the History and Present Condition of the Sheep Industry*, 485.
[11] USDA Bureau of Animal Industry. *Special Report on the History and Present Condition of the Sheep Industry of the United States.* Washington, DC: Government Printing Office, 1892. Prepared under the direction of Dr. D. E. Salmon, by Ezra Carman, H. A. Heath, and John Minto, 190-191.
[12] Robert Leslie Jones, *History of Agriculture in Ohio* (Kent, Ohio, 1983), 141.
[13] Beach, *Two Hundred Years of Sheep Raising*, 15.
[14] *Special Report on the History and Present Condition of the Sheep Industry,* 214-215, 434
[15] Stephen Powers, *The American merino: for wool and for mutton*. (New York, 1887), 26, 25.
[16] Stephen Powers, *The American merino: for wool and for mutton : a practical treatise on the selection, care, breeding and diseases of the merino sheep in all sections of the*

United States (1887), 21, 25-6; Henry Stewart, *The domestic sheep: its culture and general management.* (Chicago: American Sheep Breeder Press, 1900), 36; Black Top Breeders Association of Washington County, PA, Black Top Sheep Register, volume 1 (Washington, PA, 1885), 17-19.

[17] Beach, *Two Hundred Years of Sheep Raising*, 17.

[18] U. S. Patent Office Annual Report, 1847, 211.

[19] On a per-farm basis; cattle were declining as a proportion of grazers overall.

[20] Beach, *Two Hundred Years of Sheep Raising,* 21.

[21] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 63: "grassland farming" succeeded crop farming, taking over previously cultivated areas and halting deterioration of the soil. See also *Special Report on the History and Present Condition of the Sheep Industry,* 484.

[22] Beach, *Two Hundred Years of Sheep Raising,* 21

[23] *Special Report on the History and Present Condition of the Sheep Industry,* 483.

[24] U. S. Patent Office Annual Report, 1850, 10.

[25] Sally McMurry, *From Sugar Camps to Star Barns: Rural Life and Landscape in a Western Pennsylvania Community* (University Park: Penn State Press, 2001), 10-11.

[26] John McDowell, "Agriculture," *The Centennial of the Organization of Washington County, Pennsylvania* (Washington: Washington County Historical Society, 1881), 68.

[27] Beach, *200 Years of Sheep Raising*, 15.

[28] Lee Soltow and Kenneth Keller, "Tenancy and Asset-Holding in Late Eighteenth-Century Washington County, Pennsylvania," *Western Pennsylvania Historical Magazine*, January 1982, 1-17.

[29] *Historical Resources Inventory for Mercer County.* Prepared by the Mercer County Planning Commission, 1977.

[30] *Lawrence County Historic and Geographic Report*. Prepared by the Lawrence County Planning Commission, 1976. See page 11 and 21.

[31] *Historical Resources Inventory for Mercer County.* Prepared by the Mercer County Planning Commission, 1977.

[32] Pennsylvania Historic Survey Form files, PHMC.

[33] Stephen C. Gordon, *How to Complete the Ohio Historic Inventory*. Columbus, Ohio: Ohio Historic Preservation Office, 1992, page 145. Examples of posted forebay barns are: Lawrence County, Scott Township, site 073-SCO-001; 073-SCO-007; 073-WAS-007; in Mercer, 085-WIL-002.

[34] An "English" barn is a frame, gabled, un-banked three-bay barn, also sometimes called the "thirty by forty" because of its most common dimensions. Henry Glassie calls them "three-bay", "Yankee," or "Connecticut" barns. Sometimes lean-to "cow house" sheds were added. Henry Glassie, "The Variation of Concepts Within Tradition: Barn Building in Otsego County, New York." *Geoscience and Man* 5 (June 10, 1974): 177–235.

[35] Paul Wallace Gates, *Agriculture and the Civil War* (New York, 1965), 158. There is a map in Beach, page 7.

[36] Email communication, Carol Reardon to Sally McMurry, March 4, 2008.

[37] Gates, *Agriculture and the Civil War*, 159-162.

[38] US Department of Agriculture, Monthly and Bi-Monthly Reports, Spring 1864, 21; March 1865, 21.

[39] Henry Randall, *The Practical shepherd: a Complete Treatise on the Breeding, Management and Diseases of Sheep.* New York: the American News Company, 1863.

[40] *Washington Reporter and Tribune,* April 29, 1863; May 20, 1863; June 8, 1863; July 1, 1863; Greene County manuscript agricultural census for 1870.
[41] Beach, *Two Hundred Years of Sheep Raising,* 28.
[42] Discounting the urban counties of Philadelphia and Delaware
[43] *History and Present Condition of the Sheep Industry*, 483.
[44] *History of Mercer County, Pennsylvania* (Chicago, 1888), 207-216, notes that Mercer was third in the state in wool production and they had a Wool Growers Association beginning in 1868.
[45] A nurse crop is an annual grown in with the seeding of a perennial.
[46] *Report of the Farm Visiting Committee of the Washington County, Pennsylvania Agricultural Society, for the Year 1874*, Visit No. 1.
[47] Beach, *Two Hundred Years of Sheep Raising*, 27.
[48] *National Stockman and Farmer* November 8, 1894, 13.
[49] For further discussion of this term, see the first section of this agricultural context on early agriculture in the settlement period.
[50] *National Stockman and Farmer,* August 23, 1894, 21.
[51] Washington County Agricultural Society, *Report of the Farm Visiting Committee… for the Year 1874* , Visit No. 2 (Farm of Robert Buchanan).
[52] http://www.sil.si.edu/digitalcollections/SeedNurseryCatalogs/collection.cfm; http://ohsweb.ohiohistory.org/ohiopix/Image.cfm?ID=3159
[53] Washington County Agricultural Society, *Report of the Farm Visiting Committee… for the Year 1874* , Visit No. 5.
[54] *Centennial edition : Greene county centennial, Aug. 26 & 27, 1896. The Independent, Waynesburg, Pa.*
[55] Washington County Agricultural Society, *Report of the Farm Visiting Committee… for the Year 1874* , Visit No. 1.
[56] Beach, *Two Hundred Years of Sheep Raising,* 32, 54.
[57] "Residence of the late Isaac van Voorhis, Carroll Township," *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).
[58] Other examples can be found at sites 802302, 802307, 802318.
[59] John Jaqueth, "A history of sheep in Pennsylvania : the development of the sheep industry up to the close of the nineteenth century." Pennsylvania State College MS thesis, 1938, 58-9.
[60] "Sheep-Barns and Shelters," *American Agriculturist* November 1847, 344.
[61] James D. Ladd, "Sheep Husbandry," *Ohio Cultivator* February 1, 1857, 36.
[62] Henry Randall, *The Practical Shepherd* (New York, 1863), 217, 216; Henry Stewart, *The Shepherd's Manual* (New York, 1882), 50; Randall, *The Practical Shepherd*, 215.
[63] K. J. T. Ekblaw, *Farm Structures* (New York: MacMillan, 1914), 212; *Barn Plans and Outbuildings* (New York: Orange Judd, 1907; copyright 1881 and 1903), 134; William James Clarke, *Modern Sheep: Breeds and Management* (Chicago: American Sheep Breeder Co., 1907), 197. Though these date from a later time period, the advice was also given throughout the 19th century.
[64] Edward R. Jones, *Farm Structures*, University of Wisconsin, 1933, 112; Walter Coffey, *Productive Sheep Husbandry* (Philadelphia: J. B. Lippincott, 1918).
[65] "Sheep-Barn," *The Farmers Cabinet and American Herd Book* August 1. 1837, p. 4; "Plan of a Sheep-Barn," *American Agriculturist* October 1847, pp. 318-319; "Sheep-Barns and Shelters," *American Agriculturist* November 1847, p. 344; James H. Ladd,

"Sheep Husbandry," *Ohio Cultivator* February 1, 1857, p. 36; "North Elevation of Capt. Hammond's Sheep Barn," *Prairie Farmer* June 25, 1864, p. 441; "How to Build a Sheep Barn," *Prairie Farmer* May 6, 1865, p. 349; "Plan of Sheep Barn," *Prairie Farmer* May 13, 1865, p. 370; "Geddes' Sheep Barn," *Ohio Farmer* June 6, 1874, p. 356; "Sheep Barns and Sheds," *Ohio Farmer* January 20, 1877, p. 36; H. A. Simon, "Plan of Sheep Barn," *Ohio Farmer* January 12, 1893, p. 24. Full length books about sheep husbandry from the period include: Henry S. Randall, *The Practical Shepherd* (New York, 1863) and *Sheep Husbandry* (New York, 1848); Luke Morrell, *The American Shepherd* (New York, 1845); and Henry Stewart, *The Shepherd's Manual* (New York, 1878). The publication dates given here are not certain, because the library cataloguing is ambiguous.

[66] Luke Morrell, *The American Shepherd* (New York, 1845), 261.

[67] "Geddes' Sheep Barn," *Ohio Farmer* June 5, 1874, 356; Henry Randall, *The Practical Shepherd* (New York, 1863), 219; Powers, *The American Merino,*169.

[68] "Plan of a Sheep-Barn," *American Agriculturist* October 1847, 318-319; accessed online through APS. A later article, "Sheep Barns and Sheds," *Ohio Farmer* January 20, 1877, 36, essentially repeated the advice in the 1847 piece. Ladd, "Sheep Husbandry," advocated good lighting and ventilation as did Henry Randall, author of the most popular sheep raising manual, *The Practical Shepherd* (New York, 1863), 214.

[69] Powers, *The American Merino*, 166.

[70] Ladd, "Sheep Husbandry".

[71] Randall, *Practical Shepherd*, 219.

[72] Powers, *The American Merino*, 169.

[73] According to Thomas Visser, characteristic features of a New England sheep barn could include sheds with long open sides, sometimes with feed racks along one wall; and a hayloft above the ground floor. Others lacked the open sides, but instead exhibited patterns of door and window placement, and second-story hay storage, similar to those discussed in the prescriptive literature. Thomas Visser, *Field Guide to New England Barns and Farm Buildings*, 161-165.

[74] Henry Glassie, "The Variation of Concepts Within Tradition: Barn Building in Otsego County, New York." *Geoscience and Man* V (1974), 186.

[75] S. Lahm, "Sheep Barn and Sheep Feeding," *Ohio Cultivator* February 15, 1859, 51-3.

[76] *Report of the Transactions of the Pennsylvania State Agricultural Society,*1871-2, 105-8.

[77] *Report of the Transactions of the Pennsylvania State Agricultural Society,* 1871-2, 109-110.

[78] Contrast with basement barns in the dairy areas of the Northern Tier and Northwestern Pennsylvania, where the upper-level eaves side opposite the bank has fewer openings. Central hay doors are not uncommon in the Northern Tier and Northwestern areas, but just as often, the upper eaves side is blank, or has one or two small window openings.

[79] Thomas, *Field Guide to New England Barns,* 145.

[80] *Transactions* of the State Agricultural Society of Pennsylvania, 1872, 121.

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

[82] Alfred Creigh, *History of Washington County: from its first settlement to the present time*... (Harrisburg, 1871), 45.

[83] John Jaqueth, "History of Sheep in Pennsylvania," 58-9.

[84] *Report of the Farm Visiting Committee of the Washington County, Pennsylvania Agricultural Society, for the Year 1872*, p 121.
[85] *Caldwell's illustrated, historical, centennial atlas of Washington Co., Pennsylvania* (Condit, Ohio, 1876).
[86] *Annual Report of the Pennsylvania State Board of Agriculture*, 1877, 76.
[87] *Report of the Farm Visiting Committee of the Washington County, Pennsylvania Agricultural Society, for the Year 1874*, Visit No. 1. The 1870 committee visited John C. Clark and described drainage ditches on pp 107 and 108.
[88] Beach, *Two Hundred Years of Sheep Raising*, 44. See also *National Stockman and Farmer* October 31, 1895.
[89] G. Wayne Smith, *History of Greene County Pennsylvania.* Waynesburg, PA: 1996, 248, 519.
[90] Pennsylvania Department of Agriculture, *Annual Report*, 1907, pp 365-72; US Federal Agriculture census summaries for 1920
[91] Beach, *Two Hundred Years of Sheep Raising,* 45; W. H. Tomhave, "Possibilities of Sheep Husbandry in Pennsylvania," *Pennsylvania Farmer* January 11, 1913, 9/20.
[92] National Stockman and Farmer, July 12, 1894, 22.
[93] G. Wayne Smith, *History of Greene County*, 91, 93.
[94] Pennsylvania Department of Agriculture *Annual Report*, 1902, 451-2.
[95] *National Stockman and Farmer* May 3, 1894, 23.
[96] Joseph Fulton McFarland, *Twentieth Century History of the City of Washington and Washington County, Pennsylvania* (Chicago, 1910), 122. 1890 numbers are Based on George Fiske Johnson's figures, page 27. He used a conversion formula of 8.8 pounds milk to the gallon, but others advise a factor of 8.5 pounds. This is why the percentage estimates vary.
[97] S. O. Perkins, *Soil Survey of Greene County, Pennsylvania.* U. S. Department of Agriculture, Bureau of Soils, 23rd Annual Report, 1921, 1257.
[98] L. C. Gray, "The Trend in the Farm Ownership," *Annals of the American Academy of Political and Social Science*, Vol. 142, Farm Relief (Mar., 1929), pp. 20-26; M. E. John, "Part-Time Farming in Six Industrial Areas in Pennsylvania," Pennsylvania Agricultural Experiment Station Bulletin 361, May 1938.
[99] Greene County Planning Commission, *The Economy*—(Waynesburg, PA, 1958)
[100] See Austin Vardell Edwards, "Agricultural Land Use Changes in Pennsylvania by Minor Civil Divisions," MS Thesis, Agricultural Economics and Rural Sociology, Pennsylvania State College, 1953, Figure 3. Most of Washington and Greene Counties had over 94% of their land area in cultivation.
[101] "Inventory of Rural Electric Cooperatives, Pennsylvania, 1946," Pennsylvania Agricultural Experiment Station Bulletin 491, November 1947, Digest.
[102] Interrante, Joseph. "'You Can't Go to Town in a Bathtub: Automobile Movement and the Reorganization of American Rural Space, 1900-1930." Radical History Review Fall 1979.
[103] S. O. Perkins, *Soil Survey of Greene County, Pennsylvania.* U. S. Department of Agriculture, Bureau of Soils, 23rd Annual Report, 1921, 1252, 1258, 1259.
[104] S. O. Perkins, *Soil Survey of Greene County, Pennsylvania.* U. S. Department of Agriculture, Bureau of Soils, 23rd Annual Report, 1921, 1259
[105] Bruce Weston, ed., *the People of Southwestern Pennsylvania* (California, PA, 1991), 4-5.

[106] See for example "M. E. John, "Part-Time Farming in Six Industrial Areas in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin 361, May, 1938.
[107] Beach, *Two Hundred Years of Sheep Farming*, 57, 85.
[108] Foursquare houses appear at the following sites: 802212, 802260, 802270, 802176, 802363, 802407, 802414, 802422, 802428, and 802484.
[109] Survey sites in Washington county with twentieth century spring houses include those numbered: 802215, 802216, 802241, 802296, 802257, 802263, 802275, 802276, 802280, 802283, 802289, 802292, 802293, 802300, 802302, 802304, 802324, 802336, 802348, 802350, 802 356, 802357, 802377, 802413 and 802417.
[110] Eli Bowen mentions a "summer dining kitchen" in his *Pictorial Sketch-Book of Pennsylvania,* 1852 edition.
[111] Priscilla Brewer, *From Fireplace to Cookstove: Technology and the Domestic Ideal in America.* Syracuse: Syracuse University Press, 2000.
[112] Sally McMurry, *From Sugar Camps to Star Barns,* (University Park, PA, 2001), 140-144.
[113] Survey sites with summer kitchens, all but one in this date range, include those with numbers: 802227, 802228, 802247, 802283, 802372, 802509, 802515, 802516, 802529, 802534, 802535, and 802547.
[114] Allen Noble, *Wood, Brick, and Stone: The North American Settlement Landscape* (Amherst, Massachusetts, 1984), 39; Thomas Visser, *Field Guide to New England Barns and Farm Buildings,* 76-83.
[115] Allen G. Noble, *The Old Barn Book* (New Brunswick, NJ, 1995), 130-131.
[116] Visser, *Field Guide to New England Barns,* 145.
[117] S. O. Perkins, *Soil Survey of Greene County, Pennsylvania.* U. S. Department of Agriculture, Bureau of Soils, 23rd Annual Report, 1921, 1256.
[118] Robert Campbell, *Southwestern Pennsylvania economic development programs* AREA inc., 1963-4, 50.
[119] Emil Rauchenstein and F. P. Weaver, "Types of Farming in Pennsylvania," *Agricultural Experiment Station Bulletin 305* (April 1934), 41.
[120] Penn State Agricultural Extension Archives, Greene County agent report, 1960.
[121] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 60; Penn State Agricultural Extension Archives, Greene County agent report for 1955.
[122] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 11-2, 63. See also Penn State Agricultural Extension Archives, Greene County agent report, 1948, 1949.
[123] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 64; Penn State Agricultural Extension Archives, Greene County agent report, 1950
[124] Pasto, "Century of Farming." For a good overview of Greene County patterns in the 1950s, see Penn State Agricultural Extension Archives, Greene County agent report for 1952.
[125] Pasto, "Century of Agriculture," 41.
[126] John, "Part-Time Farming," 14-15.
[127] John, "Part-Time Farming," 9-12.
[128] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 61.
[129] Penn State Agricultural Extension Archives, Greene county agent report for 1943, 1944, 1945.
[130] Penn State Agricultural Extension Archives, Greene county agent report for 1954.

[131] Pasto, "Century of Agriculture," 54.
[132] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 66; Penn State Agricultural extension archives, Greene County narrative report, 1946.
[133] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 66.
[134] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 64.
[135] Noble suggests that Wisconsin Dairy Barns only have gambrel roofs, but field work does not seem to bear this out.
[136] I. F. Hall, "An Economic Study… 60.
[137] United States Department of Agriculture. *United States Department of Agriculture Circular No.72.* Washington, D.C.: Government Printing Office (date unknown).
[138] See Alan Noble, *Wood, Brick, and Stone*…
[139] Thomas C. Jester, *Twentieth-Century Building Materials, History and Conservation* (New York, 1995), 152-3.
[140] The New York City "Dairy Report Card" is reproduced in I. F. Hall, "An Economic Study of Farm Buildings in New York," Cornell University Agricultural Experiment Station Bulletin No.478, 1929, 29-34.
[141] Stevenson W. Fletcher, *Pennsylvania Agriculture and Country Life.* Two volumes. (Harrisburg: Pennsylvania Historical and Museum Commission, 1950–1955), Volume 2, 217-219.
[142] These plans appear in USDA Office of Cooperative Extension Work and Bureau of Public Roads Cooperation, *Farm Building and Equipment Plans and Information Series*, 1929.
[143] Pennsylvania Circular 107 says an 8 by 8 house would "do for a dairy of 10 cows."
[144] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 66.
[145] Beach, *Two Hundred Years of Sheep Farming*, 80-82.
[146] Ivy M. Howard, "Crazy Patch Fields," *Farm Journal,* August 1935, 26.
[147] A Good example of current contour/strip cropping can be seen at survey site 039-CUS-003. There are good views of strip cropping and tree line at 073-SCO-007, also 073-WAS-001, and a beautiful one at 073-WAS-005.
[148] Beach, *Two Hundred Years of Sheep Raising,* 57.
[149] A. R. Varner, et al, *The Economy ...* Greene County Planning Commission, 1958, 66.
[150] 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.
[151] 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.
[152] See Northwestern Pennsylvania Historic Agricultural Region narrative for discussion of agricultural buildings related to livestock and crops for the broader northwestern Pennsylvania region.
[153] NR Bulletin *How to Apply the National Register Criteria for Evaluation*, p 17.
[154] *Historic Farming Resources of Lancaster County*, MPDF, 1994.
[155] 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).

[156] "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.
[157] "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
[158] Ibid.
[159] Ibid.
[160] Ibid.