RURAL VERNACULAR BUILDING TRADITION: THE DESIGN, CONSTRUCTION, AND USE OF SPRINGHOUSES IN MONTGOMERY COUNTY, VIRGINIA

by

Kristen D. Viar

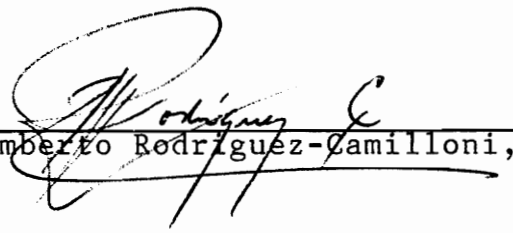
Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Master of Science

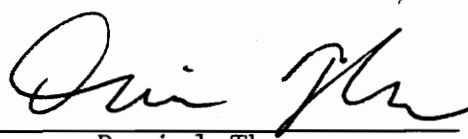
in

Architecture and Urban Studies

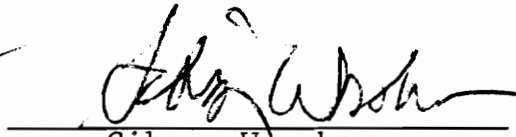
APPROVED:



Humberto Rodriguez-Camilloni, Chair



Daniel Thorp



Gibson Worsham

May 6, 1993

Blacksburg, Virginia

RURAL VERNACULAR BUILDING TRADITION: THE DESIGN, CONSTRUCTION, AND USE OF SPRINGHOUSES IN MONTGOMERY COUNTY, VIRGINIA

by

Kristen D. Viar

Humberto Rodriguez-Camilloni, Chair

Architecture and Urban Studies

(ABSTRACT)

The research hypothesis of this study states that the springhouses of Montgomery County, Virginia, are part of an established, regionally specific, rural vernacular building tradition. Over the one-hundred and fifty-year period examined for this survey, the form and design of springhouses remained consistent, but the size, number, construction materials, and functions of springhouses changed, in response to economic, social, and technological developments.

The purpose of this study was two-fold: first, to document existing springhouses in Montgomery County, Virginia, using photographs and an evaluation form; and secondly, to provide analysis and interpretation of regional springhouse design, construction, and use, based on fieldwork.

While springhouses appear to be relatively few in number in comparison with other farm structures, such as barns, many were adapted and maintained for decades, and some are still being used today. Their continued survival, however, may depend upon sympathetic property owners who recognize the significance of the springhouse to the rural landscape. This work will comment on the physical and material contexts of the springhouse as a building type; describe springhouse characteristics; and provide a catalog of fifty existing springhouses in Montgomery County, Virginia.

ACKNOWLEDGEMENTS

I would like to thank Humberto Rodriguez-Camilloni, Daniel Thorp, and Gibson Worsham for their guidance and advice; my family for their continued support; and Leslie, for her patience and encouragement.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER 1. INTRODUCTION

RESEARCH FOCUS

The springhouse, a small outbuilding constructed over or adjacent to a spring or stream, was designed to protect drinking water supplies and keep cool perishables such as milk, butter, cheese, and fruit. Springhouses were built consistently in Montgomery County for at least one-hundred and fifty years. Though only a relatively small number of households had them at any given time, springhouses, like barns, were part of an established rural vernacular building tradition.

Although the form and design of springhouses remained consistent for nearly two centuries, the size, number, construction materials, and functions of these buildings changed in response to regional economic, social, and technological flux. The springhouse survived as a viable building type well into the mid-twentieth century because it was an effective way to store, cool, and protect food and water supplies. Even today, a small number of springhouses are being used in much the same way they were in the nineteenth century.

Although some of these buildings are still functional, it is a critical time for springhouses, and many other rural vernacular structures, because increasing urbanization and the decline of the family farm have contributed to their neglect and destruction. This study catalogs fifty springhouses in Montgomery County, Virginia, and provides analysis and interpretation of regional springhouse design, construction, and use. Springhouses were an integral element of many farms in what used to be a predominantly rural, agricultural county, and their importance cannot be overestimated.

LITERATURE REVIEW

Within the last twenty-five years, researchers have become increasingly aware of the need to incorporate vernacular structures into their perspectives on architecture and history. Vernacular commercial, domestic, and religious buildings are being examined more frequently and with progressively more rigor. Vernacular architectural studies, however, have been largely directed toward antebellum domestic structures, with only a few exceptions.

Rural vernacular buildings, including farmhouses, remain strikingly understudied. A handful of pictorial histories

on rural houses and barns was published in the last decade, but systematic documentation and analysis are lacking. A notable exception are John Morgan's studies of the evolution of the cantilever, log barn (1990). There are only scattered references to the myriad smaller outbuildings found on most farms, and virtually no collection of writings on springhouses.

One recent work by Ann Bevins (1985) discussed barn typology and mentioned numerous outbuildings but excluded springhouses. Similarly, two important works on rural vernacular architecture focused on houses, and, to a degree, barns and smaller structures, but the outbuildings were not examined in depth: Sally McMurry (1988) used domestic architecture as an "index to social and cultural history" (p.viii), whereas the work edited by Allen Noble (1992) described the cultural landscapes created by various native and immigrant groups in North America.

If springs and springhouses were mentioned at all in the literature, it was usually in the context of spas and resorts that became popular in the early 1800s and operated into the 1930s. Springwater, in this case, was used primarily for bathing purposes, to remedy various ills such as dysentery, tuberculosis, and cholera. In addition, spring-

water was bottled and sold as patent medicine for decades. The use of springs by the affluent for health and recreation purposes was parallel to but distinctly separate from the use of springhouses by farm families to protect drinking water supplies from contamination and to store foods.

A significant early work by Amos Long, Jr., is among the critical twentieth-century writings on vernacular farm building traditions. Long's book, The Pennsylvania German Family Farm (1972), examined the forms and functions of over twenty-five structures found on German farmsteads in Pennsylvania, including springhouses, which received a twenty-one page analysis, including photographs. Long studied the history of the Pennsylvania Germans through their "material culture...houses, barns...out-buildings, animals, equipment, and tools" (p.xiii). He stressed that the smaller structures of the farm compound should be given the attention and interest usually reserved for the farm-house and barn. Equally remarkable was a series of articles Long published in Pennsylvania Folklife over a six-year period (1960-1966) on various outbuildings, including the springhouse. Long's early insistence on the importance of outbuildings in understanding history distinguishes him as a critical figure in the study of farm buildings.

Prior to the twentieth century, the most popular sources of information on farm buildings and farmstead lay-out were farm journals and agricultural publications. But even books with exhaustive titles such as Rural Architecture: Being a Complete Description of Farmhouses, Cottages, and Outbuildings (1852), and Barns, Outbuildings, and Fences (1870), managed to omit references to important outbuildings, including the springhouse.

The publication in 1881 of Byron Halstead's book, Barns, Sheds, and Outbuildings, is evidence of the increasingly "scientific" approach being adopted within agricultural and farm service circles. Halstead earned a Sc.D. from Harvard in 1878 and became a professor of botany at a college in Ohio. He contributed to and edited various botanical and agricultural publications and was equipped to write extensively about farm life.

Halstead's book, similar in format to Long's book ninety years later, is divided into chapters according to building use, with a chapter each on general barns, cattle barns, sheep barns, poultry houses, piggeries, corn houses, ice houses, smoke houses, granaries, dog kennels, bird houses, and root cellars. Halstead also devoted a seven-page chapter to the springhouse, in which he described, among other

things, how to prepare a spring for use as a drinking source. Halstead provided a plan, section, and elevations for a "modern" dome-shaped, poured concrete springhouse, complete with construction tips and recommendations for interior furnishings.

Halstead's Barns, Sheds, and Outbuildings is valuable for its discussions of common farm structures that usually go unrecognized as important elements in the rural landscape. McMurry (1988) described historians' problems with these artifacts of day-to-day life: the objects are common, yet their familiarity obscures their importance from contemporary eyes (p.viii).

Halstead, Long, and a few others wrote about these most basic rural architectural features, and found significance, even beauty, in their everyday surroundings. Halstead (1881) wrote that outbuildings "can be pleasing objects, and impart an impression of comfort and completeness upon all who see them" (p.xii). The study of rural buildings offers a rich source of information about day-to-day farm life, the routines, the unexpected, the overlooked.

METHODOLOGY

The purpose of this study was two-fold: to document existing springhouses in Montgomery County, Virginia, and to provide analysis and interpretation of their design, construction, and use. The author developed a Springhouse Evaluation Form (see Appendix A) which allows systematic documentation of each site. In addition, photographs were taken of each springhouse and fifty springhouses were catalogued (see Catalog of Springhouses Surveyed in Montgomery County, Virginia, 1993).

The initial database was obtained from the Virginia Historic Landmarks Commission Survey of Montgomery County, Virginia (1985-86), completed by Gibson Worsham, which documented eight-hundred and ten commercial, domestic, and religious buildings built in the county prior to 1935. Of these sites, it was recorded that thirty-four included springhouses. Another sixteen springhouses that were not included in the Commission Survey were located during field research. Three springhouses were omitted from the study because permission to survey them was denied.

Advantages to using the Virginia Historic Landmarks Survey data are the thoroughness of the survey and its relatively

recent completion date. The cut-off date of the survey is both an advantage and a disadvantage. While the year 1935 coincides neatly with rural electrification, many springhouses in Montgomery County were built after this date and thus did not appear in the Virginia Historic Landmarks survey. Additionally, free-standing springhouses, regardless of age, were usually omitted from the Virginia Historic Landmarks survey. Lastly, a significant problem with survey work is the accidental survival rate among building types, which can contribute to under- or over-representation of certain buildings.

JUSTIFICATION

Springhouses, like a number of domestic outbuildings, are rapidly becoming obsolete. As the springhouse disappears from the rural landscape, the ability to interpret rural life and vernacular architectural history is diminished. The systematic study and documentation of farm buildings, and specifically springhouses, offers researchers a number of opportunities.

Buildings are often the only physical evidence of history (Burns, 1989), and by studying buildings as cultural artifacts, our understanding of history expands considerably.

The rural built environment is an expression of "cultural values, social behavior, and individual actions worked upon particular localities over a span of time" (Meinig, 1979, p.6). The springhouse is a significant part of that landscape, no more and no less important that other structures in terms of its role as a clue to culture (Meinig, 1979).

Additionally, domestic outbuildings should be studied in order to clarify the role they played in the development of the United States. Historically, the North American economy was driven by a vast agricultural base, the component parts of which were family farms (Tishler, 1978). Individual farms, in turn, were made up of a nucleus of service buildings, including the springhouse.

The study of farm structures allows for a more inclusive, rigorous definition of preservation activity, one that encompasses broad environmental concerns and conservation of both rural buildings and their natural settings. Rural vernacular architecture is woefully understudied and neglected by preservationists, despite the assertion by the National Trust for Historic Preservation that "agrarian structures constitute probably the most diverse elements of the built environment" (1976, p.5). Without fieldwork,

it is difficult to discuss vernacular buildings, and a database on rural outbuildings simply does not exist.

CHAPTER 2. PHYSICAL AND MATERIAL CONTEXTS

GEOLOGY OF VIRGINIA SPRINGS

Springhouses, unlike most farm structures, are regionally specific: they are only built in areas with a particular type of geological make-up. The term karst is used to describe areas with high concentrations of dolomite, limestone, shale, and sandstone, like Montgomery County, Virginia (Dietrich, 1970). Figure 1 is a map of Virginia with "spring counties" (counties with karst topography and the densest concentrations of springs) highlighted; Montgomery County is shaded in. This combination of permeable and less-permeable rock is ideal for spring formation. In areas without karst topography, wells and other sources were used for water supplies. In this sense, springhouses are unique among outbuildings, and organically tied to specific geographical regions in a way that no other farm structure can claim. Additional information of the geology of Virginia springs is incorporated in Appendix B.

IMPORTANCE OF SPRINGS AND SPRINGHOUSES

The importance of springs in contemporary times is unrecog-

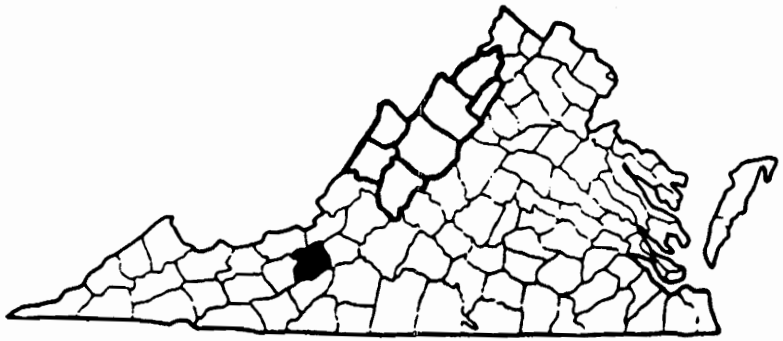


Figure 1. Map of Virginia with "Spring Counties" Highlighted and Montgomery County Shaded In

nized, probably because people believe springs to be primitive water sources, unsuitable in an age of indoor plumbing and refrigeration. In fact, thousands of rural homes in Virginia depend on spring use for drinking, bathing, and cooking (Springs of Virginia, 1992); see Appendix C for further information on the history of public works. Many farm operations use spring water, such as livestock production, milk cooling, silo filling, fruit washing, processing farm products, irrigation of gardens, fire protection, spraying, and dipping (Neubauer & Walker, 1961). The Virginia Public Waterworks uses one-hundred and fifty-seven springs, most west of the Blue Ridge. Commercial uses of spring sources include breweries, distilleries, fish hatcheries, and bottled water (Springs, 1992).

Property values are higher on land with a "natural spring, spring-fed stream, or spring pond" (Springs, 1992, p.1). More subtle benefits of springs include the habitat they provide for fish, insect, and wildlife populations. Spring sources are also economically advantageous: daily water requirements for one horse have been estimated at twelve gallons; for one milk cow, twenty gallons; for one hog, four gallons; for a sheep, two gallons; and for one-hundred chickens, six gallons (Leavy, 1978). The only costs of spring water involve keeping the water source clean and protected,

and the electricity if water is pumped from the spring source.

Long before chemical analysis of water supplies was available, people recognized that a spring enclosure was necessary to keep spring water healthy and uncontaminated. By covering the spring source with building, the water supply is protected from direct contact with most animals. The average-size spring, however, has an underground drainage basin of about ten square miles (Springs, 1992); so water contamination can occur literally miles from the spring itself. Springhouses, then, were valued not only for the immediate protection they provided for water supplies, but for other vital functions such as cooling and storing food.

Several dangerous water-borne diseases--giardiasis, leptospirosis, and mastitis--are found in streams, ponds, and springs where animals drink from and defecate into the same water source (Springs, 1992). Non-farm animals such as beavers, deer, and muskrats also carry diseases and can contaminate water supplies. Other sources of contamination include runoff from "barnyards, animal feedlots, [and] nearby fertilized fields" (Springs, 1992, p.9). In addition to disease-causing bacteria, viruses, and parasites, livestock manure and urine can contaminate springs with "excess nu-

trients...[and] poison methane and ammonia gases" (Springs, 1992, p.12).

Spring enclosures discourage animals, especially cattle, from frequenting the area in search of water. Cattle overgraze vegetation and trample soil so it becomes bare and compacted, which leads to increased erosion and siltation (Springs, 1992). Spring-fed streams may also need to be enclosed, as cattle cause streams to become shallow and muddy. Over a period of time, springs unprotected from livestock may develop "lower oxygen concentrations, higher water temperatures, and reduced fish and insect populations (Springs, 1992, p.12). Another advantage to spring enclosure is the reduced chances of livestock injury on steep eroded banks (Springs, 1992). Additional information on spring maintenance can be found in Appendix D.

SPRINGHOUSE USAGE

In addition to protecting springs from contamination and overgrazing by livestock and non-farm animals, springhouses served other important functions. According to Long (1972), springhouses were used extensively in dairying, to cool milk and milk products, cheese, and butter. They were also used as storage for fruits, vegetables,

cider, and vinegar. If the building had a fireplace, one floor was sometimes used for laundering, butchering, cooking, and boiling soap (Long, 1972). The springhouse was primarily a domestic building, and it was used most often by women, and children of both sexes. Indeed, the springhouse was a critical outbuilding on many farms. Long (1972) described it as a "vital and almost inseparable adjunct of the early...farmstead until the beginning of [the twentieth] century" (p.106).

SURVIVAL AND EXTINCTION OF FARM BUILDINGS

Of the eight-hundred and ten sites surveyed in Montgomery County in 1985-86 for the Division of Historic Landmarks, thirty-four included springhouses. Of course, not all sites included domestic buildings, and not all were rural. Some of the town sites must have obtained water from communal springs and other sources. Town sites also had access to electricity and indoor plumbing earlier than rural sites; so town springhouses would have been fewer and they would not have been built as late as they were in the country. However, the surprisingly small number of springhouses still standing within town and city limits suggests that, aside from other factors, urbanization has taken a toll on domestic outbuildings.

There are a number of other factors that play a role in the survival (or extinction) of farm buildings. Nan Kegley (1986) sampled thirty-three farms in the Blue Ridge and found eight springhouses intact. Kegley determined that outbuildings that continued to be functional, or could be adapted easily to new functions, were preserved, while structures that ceased to be functional were least likely to be saved (on the thirty-three farms, the most common outbuildings were chickenhouses, corncribs, smokehouses, and springhouses). Amos Long, Jr., came to the same general conclusions regarding the survival of springhouses on Pennsylvania German farms. Springhouses ceased to be needed for cooling food, and increasing concern about sanitation and water purity discouraged people from using springs for drinking water supplies. Springs were also considerably more inconvenient than tap water.

Ann Bevins (1984-85) suggested that farm residents let smaller buildings deteriorate if the money invested in their upkeep would not be returned in saved labor or increased crop and animal production. Outbuildings may not be saved or actively maintained merely for "aesthetics and 'old times' sake' " (p.21).

William Tishler (1978) marked the advent of farm building

decline in the post-World War I years, and cited diverse forces that significantly altered the look of rural folk architecture: the introduction of barbed wire, the metal windmill, the gasoline-powered tractor, and rural electrification. Parallel to these changes was the rise of agribusiness, which meant "less attention to individual farm buildings and the development of larger, more standardized equipment and structures" (National Trust for Historic Preservation, 1976, p.95).

FARM LAY-OUT

Suprisingly, more has been written about farm planning than on the individual buildings that comprise the farm itself. Farm lay-out was described in agricultural journals and books on farm management as early as the 1820s, and contemporary works offer similar advice on successful farm planning. Most authors suggest that one or a combination of the following factors should guide farm building lay-out: efficiency, aesthetics, and individual preference.

An efficient farm lay-out was defined repeatedly in the literature as one that minimized walking distance between buildings yet allowed enough space between structures for safety and ease of movement. In the book Farm Buildings

(1904), the costs of an inefficient farm lay-out are described in explicit terms:

> Proximity to a source of pure water to the barn or stable is of more importance than might at first thought appear. To have a spring...located a quarter of a mile from the barns often means a great deal of extra labor on the part of the work stock in traveling that distance every day for their water. Put the water even one-eighth of a mile from the barn and say the horses are watered there. Three trips a day with work horses means three-quarters of a mile of travel, and generally not over the smoothest road. This amounts to some two-hundred and seventy miles each year, and a farmer may live sixty years on his farm. Put it low and say that he travels but 15,000 miles in watering his horses during his lifetime. Is this not an important item in farm economies? (p.172).

Nan Kegley (1986) elaborated on the notion of efficiency in her study of nineteenth-century Blue Ridge farms. She concluded that spatial relationships between farm structures depended upon the function(s) that the buildings served and how often they were used. If a building was used primarily for house-oriented activities, it was situated near the house. Kegley cites woodsheds, springhouses, smokehouses, chickenhouses, applehouses, and summer kitchens as examples of structures associated with home life. If the buildings were primarily associated with farming activities, Kegley concluded that they would be oriented toward the barn. These buildings included hogpens, granaries, sheephouses, corncribs, wagonsheds, and feedhouses.

Another factor Kegley cited in farmstead lay-out was frequency of building use. Structures used on a daily basis year-round or on a daily basis during certain times of the year were located close to either the house or the barn. Structures that were used infrequently were placed farthest from the house and barn.

Amos Long, Jr., came to similar conclusions in his analysis of Pennsylvania German farm planning (1972). He stated that studies [not cited] reveal that one-third or more of all the hours of labor required for the production of crops and livestock is spent at work in and around the farm buildings" (p.18), and thus it is apparent that the efficient grouping of farm buildings is necessary to insure cost-effective farm management.

Aesthetics were not overlooked by planners in descriptions of farmstead lay-out. Some authors advise that buildings be placed so the gable ridges are at right angles or parallel to those of adjacent buildings. Leavy (1978) suggested that this method of placement allows for an "easily comprehensible pattern [of buildings] and...[a] neat and orderly arrangement of lot fences and gates" (p.10). Others, such as Byron Halstead (1881), directed that outbuildings "should not be so close to the house as to appear a part of

it" (p.xi), and the author of Farm Buildings (1904) advised that visitors should not have to pass "yards and gaping barn doors" (p.11) in order to reach the house. Likewise, outbuildings should be arranged in a compact and convenient manner, and "pens, sheds, and shacks should not be conspicuous in a general front view" (Farm Buildings, 1904, p.12).

Halstead (1881) was one author who considered personal preference an important factor in building arrangement. He advised that the guidelines for farm lay-out should be flexible and easily adaptable to a variety of conditions, including the preferences of the farm family: "Only the most general rules can be laid down to guide one in the selection of a site for barns and outbuildings. Much depends on the wants to be consulted and met. Individual taste may, and often does, have very much to do in determining positions" (p.xi).

There is disagreement about actual farmstead lay-out as evidenced in existing farm complexes. Tishler (1978) described two types of European farmsteads that were brought over by immigrants to North America: block and court arrangements. Block farms included living and service areas under a continuous roof, whereas court farms had

structures placed around and/or behind the house to form a loosely enclosed courtyard. Gianni, Kemner, and Shiles (1989) reject the notion that farm buildings were arranged around a definable court, and, instead, suggest that outbuildings were "presented as a collection of distinct objects...[whose] autonomy is neither questioned nor compromised by the possibility of an organizational spatial figure" (pp.13-14).

Researchers do agree that the evolution of farm lay-out was linked to various agricultural, economic, and technological developments. Noble (1992), for example, described how the introduction of horses and farm machinery altered the lay-out of the typical farm:

> As turning circles of machinery widened and as the shelter area necessary for...draft animals grew, it became evident that an arrangement of buildings suited to an operation using herded stock and hand-sown and harvested grain was inappropriate for one based on team-drawn implements, and was totally inadequate for fully mechanized operations (p.313).

CHAPTER 3. ANALYSIS AND INTERPRETATION

SITE

LOCATION

Forty-seven (94%) of the fifty springhouses surveyed are located in rural Montgomery County; two (4%) are in Blacksburg (60-240, 150-100-11); and one (2%) is in Christiansburg (60-180). Table 1 breaks down the location of springhouses by county, towns, and city; Figure 2 is a route map of Montgomery County; and Figure 3 shows the geographical distribution of springhouses in the county.

The small number of springhouses in Blacksburg and Christiansburg is due in part to urbanization. Additionally, springhouses were not built as frequently in towns because residents used communal spring sources and had access to electricity and tap water earlier than many county residents. Springhouses were thus replaced earlier in the towns than in the country. Of the three springhouses within town limits, two are part of exceptional properties. The farm Solitude, an 1801 National Historic Landmark, has a two-story coursed rubble and log springhouse (150-100-11).

Table 1. Location of Springhouses Surveyed in Montgomery County, 1993

Location	Number	Percentage of Total
Blacksburg	2	4
Christiansburg	1	2
Rural Montgomery County	47	94
	50	100

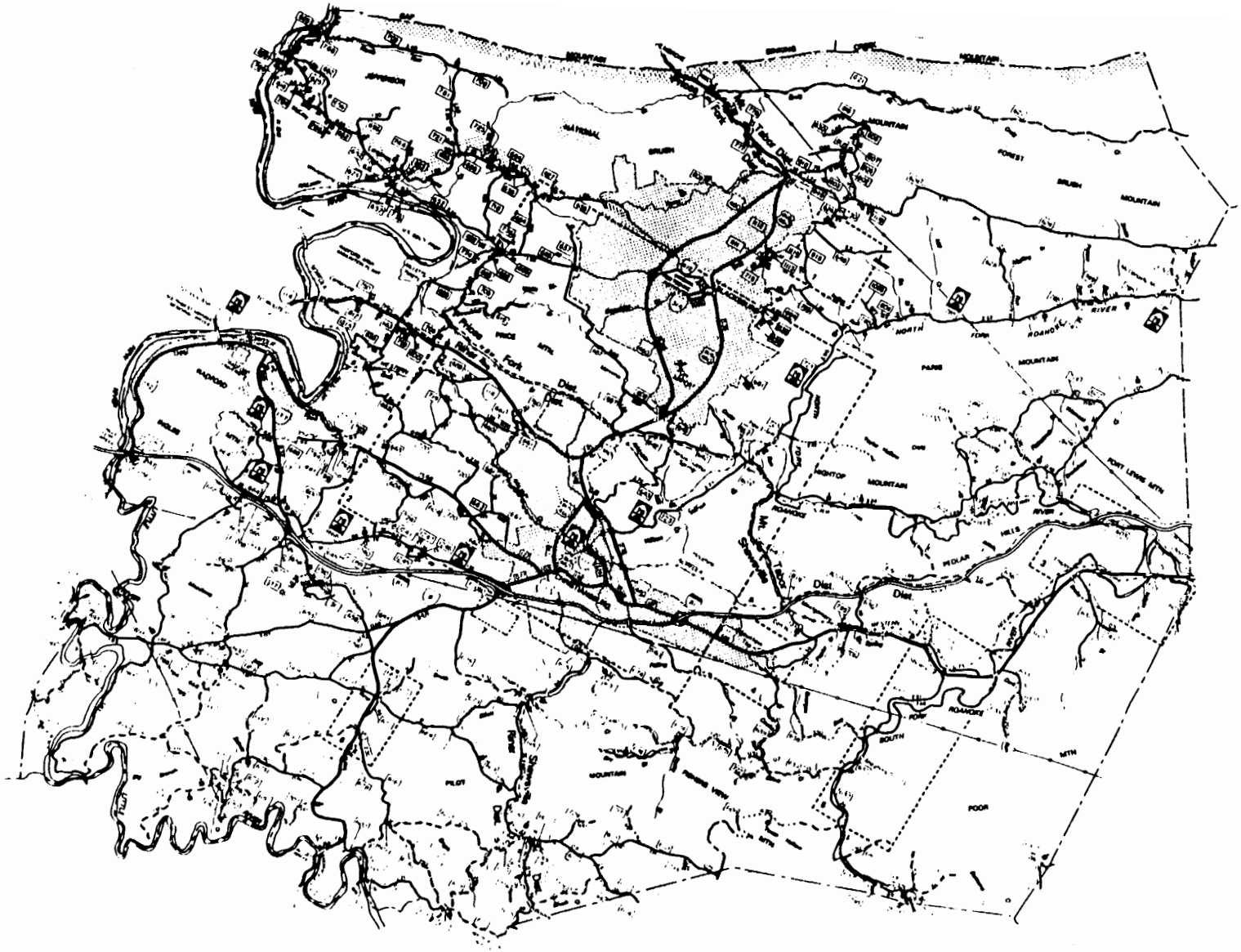


Figure 2. Route Map of Montgomery County

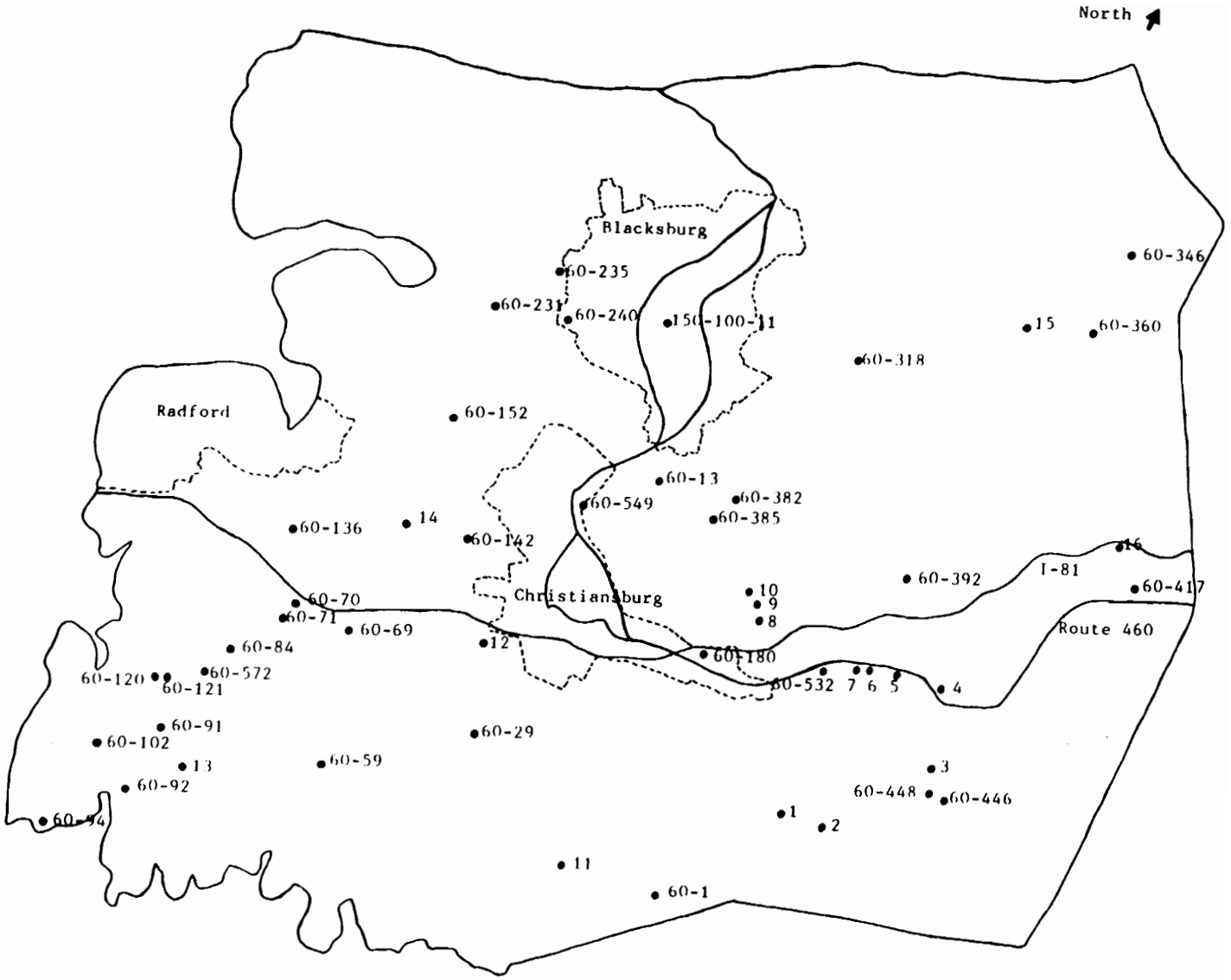


Figure 3. Geographical Distribution of Springhouses in Montgomery County

The Linkous-Kipps house, an early nineteenth-century National Historic Landmark, has a ten-foot-square poured concrete and frame springhouse (60-240) with three, six-light fixed windows. Solitude and the Linkous-Kipps house are both in Blacksburg.

AGE

Historically, the construction of the main house probably preceded construction of other farm buildings. The majority (twenty-six, or 52%) of houses served by the springhouses in this study were built between 1875-1925 (see Table 2), whereas the majority (thirty-nine, or 78%) of springhouses were built between 1900-50. Table 3 breaks down the construction date of springhouses into twenty-five year periods; Figure 4 shows the age distribution of springhouses in the county. Eleven (22%) houses and springhouses are roughly "contemporaries" (built within the same twenty-five year period). Table 4 shows the construction date of houses compared to springhouses.

Twelve sites (24%) included a house built in the twenty-five year period prior to construction of the springhouse (a potential age difference between house and springhouse of zero to fifty years). Another fourteen (28%) houses

Table 2. Age of Houses Surveyed in Montgomery County, 1993

Construction Date	Number	Percentage of Total
1800-25	5	10
1826-50	2	4
1851-75	8	16
1876-1900	17	34
1901-25	9	18
1926-50	4	8
1951-Present	4	8
	49	100

Table 3. Age of Springhouses Surveyed in Montgomery County, 1993

Construction Date	Number	Percentage of Total
1800-25	2	4
1826-50	1	2
1851-75	3	6
1876-1900	3	6
1901-25	19	38
1926-50	20	40
1951-Present	2	4
	50	100

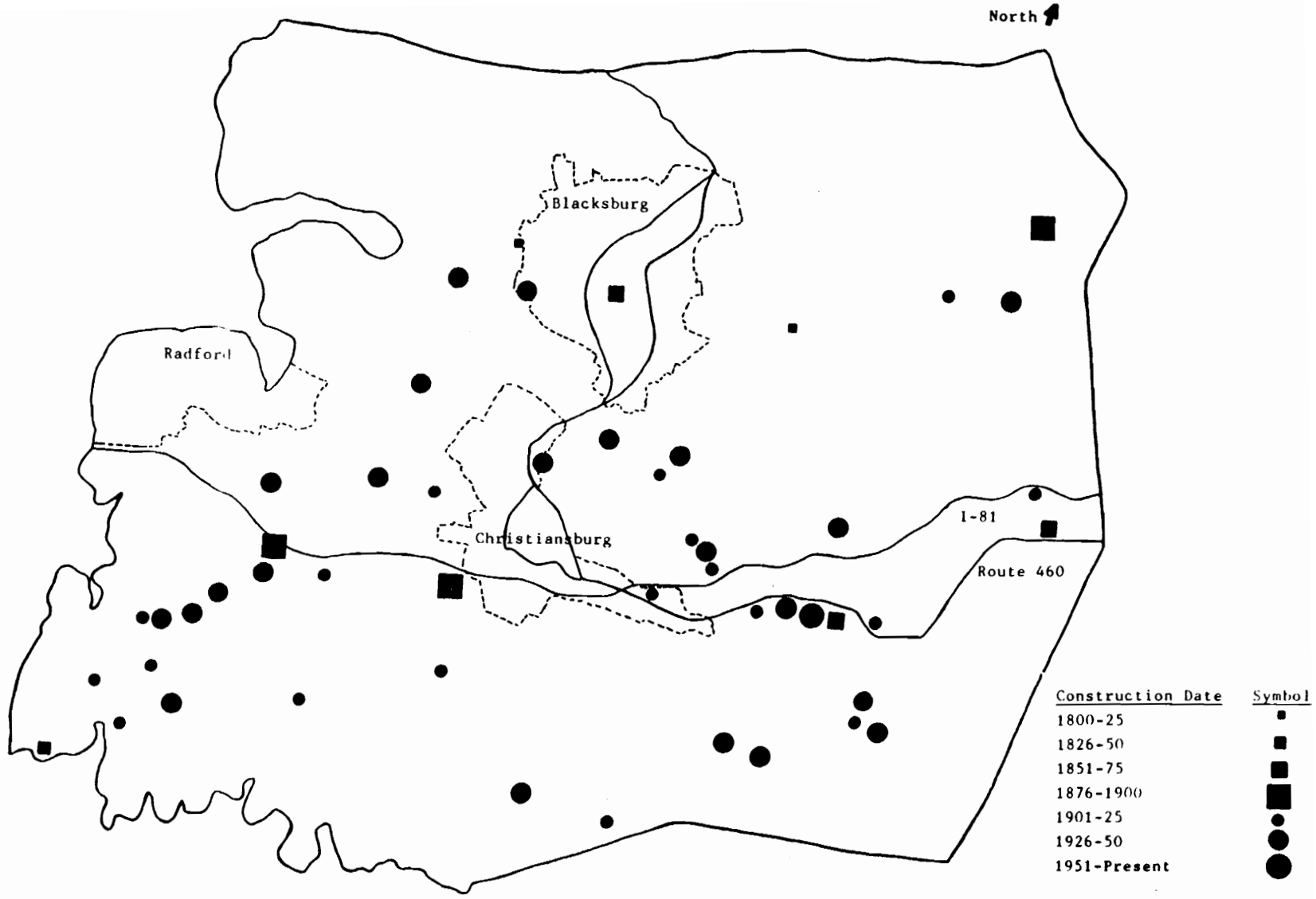


Figure 4. Distribution of Springhouse Age in Montgomery County

Table 4. Construction Date of Houses Compared to Springhouses in Montgomery County

Construction Date	Number	Percentage of Total
House and Springhouse Contemporary (Same 25-year Period)	11	22
House Built in Period Immediately Prior to Springhouse	12	24
House Built Two Periods Prior to Springhouse	14	28
House Built Three to Five Periods Prior to Springhouse	8	16
House Built Between 1951-93	4	8
	49	100

were built two periods prior to construction of the springhouse (a potential age difference of twenty-five to seventy-five years). Eight sites (16%) included a house built from three to five periods prior to construction of the springhouse (a potential age difference of fifty to one-hundred and fifty years). Four sites (8%) included "new" houses (built after 1951), and one site (2%) without a house included a 1925-50 springhouse.

Three of the five earliest house sites have the earliest springhouses, and they are concentrated in the agriculturally important north-central part of Montgomery County.

Age groupings indicate that most (thirty-four, or 68%) springhouses were built anywhere from one to one-hundred and fifty years after construction of the house. This may mean that food storage and cooling were achieved without the help of a springhouse in the early years of many farmsteads; and spring sources may have been unprotected until adequate time and resources were available to build a springhouse. It could also mean original springhouses were not built as well as the houses, and have been replaced.

Rural residents built springhouses well into the mid-twentieth century, in part because, without access to electricity,

the most efficient way to cool and protect food and water was with a springhouse. The importance of springhouses to property-owners today is evident in their continued use: twenty-eight (56%) springhouses are still used for household and farm water supply and storage (see Table 5). Thirty-two (64%) springhouses are in stable condition, with only minor repairs needed (see Table 6).

SPRINGHOUSE ORIENTATION AND RELATION TO HOUSE

Thirty (60%) springhouses faced one of the cardinal directions; thirty of forty-nine (61%) houses also faced one of the cardinal directions (see Table 7). Of the eight houses facing south, six (75%) have springhouses that face north. Twenty (40%) sites included a house and springhouse placed perpendicular to one another or facing in the same or opposite directions. Thirty (60%) sites did not have the house and springhouse placed at right angles to each other or facing in the same or opposite directions. Lining up the house and outbuildings, or placing them at right angles to each other, contributes to an orderly and coherent farm lay-out. Since the spring determined the location of the springhouse, a formal relationship was less likely than with other outbuildings.

Table 5. Current Use of Springhouses in Montgomery County

Use	Number	Percentage of Total
Water Supply	23	46
Storage	5	10
None	22	44
	50	100

Table 6. Condition of Springhouses in Montgomery County

Condition*	Number	Percentage of Total
Excellent/Good	4	8
Good/Fair	28	56
Fair/Poor	18	36
	50	100

*Excellent/Good: minor repairs needed; original materials intact; minimum alterations/additions.

Good/Fair: repairs needed; most original materials intact; some alterations/additions.

Fair/Poor: structural repairs needed; missing original materials; considerable alterations/additions.

Table 7. Orientation of Houses and Springhouses in Montgomery County

Orientation	Number of Houses	Percentage of Total	Number of Spring-houses	Percent-age of Total
North	5	10	12	24
South	8	16	10	20
East	9	18	5	10
West	8	16	3	6
North-East	3	6	5	10
North-West	4	8	7	14
South-East	4	8	3	6
South-West	5	10	5	10
	49	100	50	100

TOPOGRAPHY

Thirty (60%) springhouses are on a gentle slope; fifteen (30%) are on a moderate slope; and five (10%) are on a steep slope (see Table 8). Twenty-four (48%) springhouses face into the slope; thirteen (26%) have a gable ridge parallel to the slope; seven (14%) bear no apparent relation to the slope; and six (12%) face away from the slope (see Table 9).

The slope of the land and the occurence of springs may be geologically linked (a spring may be more likely to occur in gentle terrain). If so, it coincides neatly with practical concerns: gentle slopes allow for easy and fast access to the springhouse, with less chance of injury than on steep slopes.

PLAN

DIMENSIONS

In many cases, springhouses are the smallest structures on farms. Nineteen (38%) springhouses surveyed contain between forty-five and one-hundred square feet; sixteen (32%) contain between one-hundred-and-one and one-hundred and fifty square

Table 8. Topography

Grade	Number	Percentage of Total
Steep	5	10
Moderate	15	30
Gentle	30	60
	50	100

Table 9. Relation of Springhouses and Topography

Direction	Number	Percentage of Total
Faces Slope	24	48
Faces Away From Slope	6	12
Gable Ridge Parallel to Slope	13	26
No Apparent Relation to Slope	7	14
	50	100

feet; six (12%) include between one-hundred and fifty-one and two-hundred square feet; four (8%) contain between two-hundred-and-one and two-hundred and fifty square feet; and five (10%) include more than three-hundred square feet. Table 10 breaks down the springhouses according to square footage; Figure 5 shows the distribution of springhouse size in the county.

Of nine springhouses built before 1900, eight (89%) contain one-hundred-and-one square feet or more. Of forty-one springhouses built after 1900, twenty-two (54%) contain more than one-hundred-and-one square feet (see Table 11).

These dimensions suggest that the majority of springhouses were used in conjunction with light to moderate dairying activities on single-family farms. The size of springhouses appears to have decreased beginning in the early twentieth century. This may be due in part to the change in construction materials (it is probably easier to build a compact springhouse with poured concrete than with stone). In addition, springhouses were not used as often for drinking water supplies in the twentieth century, so the springbox and overhang were not needed. Lastly, households in the twentieth century are smaller than they were in the nineteenth century; so springhouses were used by fewer

Table 10. Springhouse Dimensions in Montgomery County

Square Feet	Number	Percentage of Total
45-100	19	38
101-150	16	32
151-200	6	12
201-250	4	8
300^{+}	5	10
	50	100

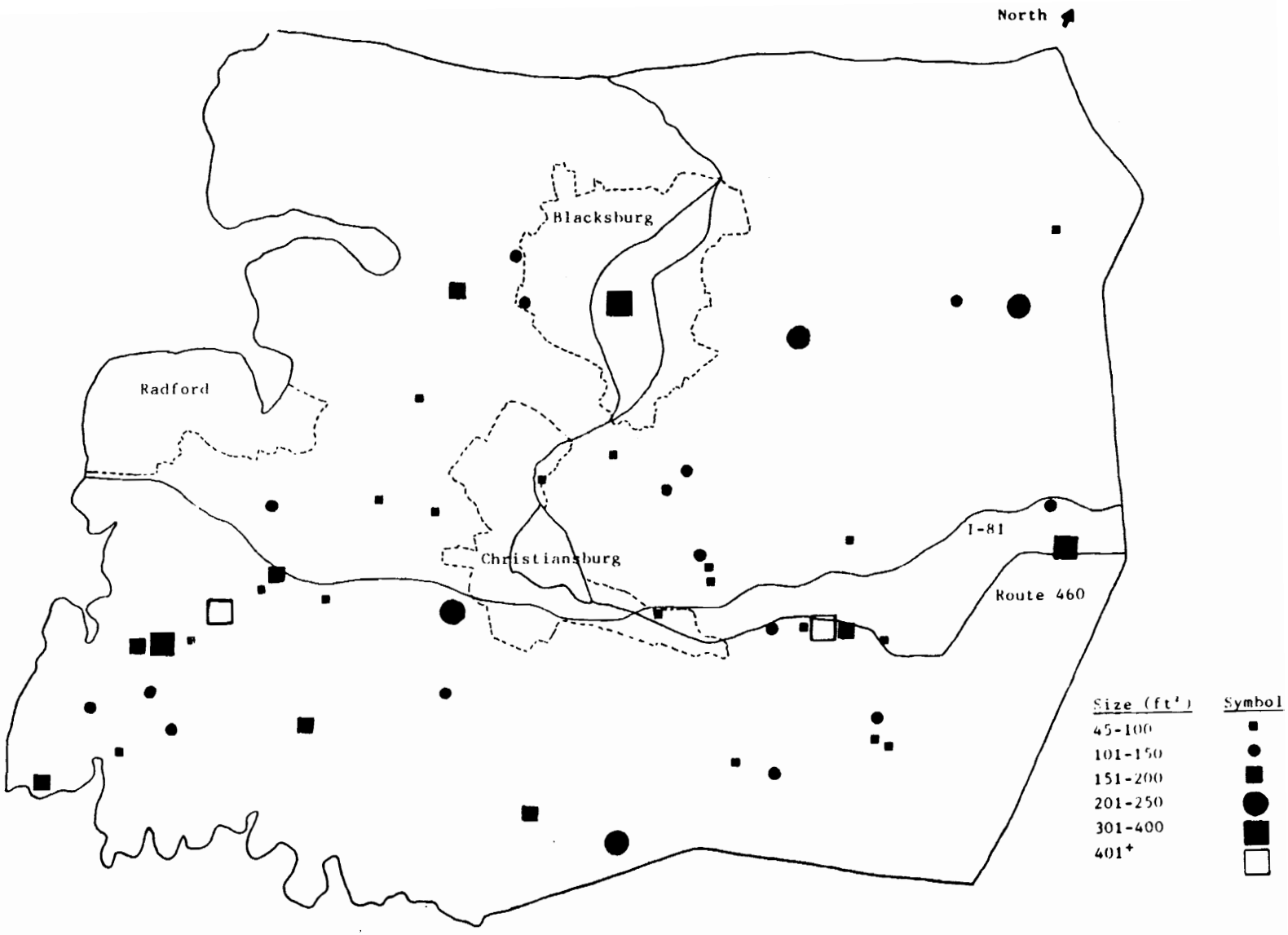


Figure 5. Distribution of Springhouse Size in Montgomery County

Table 11. Springhouse Age Compared to Dimensions in Montgomery County

Construction Date	Number	Number with 101^{+} sq.ft.	Percentage of Total
Prior to 1900	9	8	89
After 1900	41	22	54
	50		

people to store fewer goods.

TROUGH LAY-OUT

Seven distinct floor plans were identified among thirty-two (64%) springhouses with intact trough lay-outs.

1. Eleven (34%) springhouses are front-gabled with a trough that runs from front to back along a side wall. This lay-out is found in springhouses built from 1800-1925.
2. Eleven (34%) springhouses are side-gabled with a trough that runs across the back wall. This lay-out is found in springhouses built from 1800-1950.
3. Four (12.5%) springhouses are front-gabled with an L-shaped trough (60-120, 60-240, 60-385, 60-446). Three of the four were built between 1900-25.
4. Two (6%) springhouses are front-gabled with a trough that runs from back to front along a side wall (60-13, 60-136). Both are concrete block and date from 1925-50.
5. Two (6%) are side-gabled with an L-shaped trough (60-71, 60-91). Both date after 1900.
6. One (3%) springhouse is front-gabled with two perpendicular troughs (7). It dates from 1925-50.
7. One (3%) springhouse is side-gabled with a central trough (60-84). It dates from 1925-50.

Table 12 breaks down springhouses according to trough lay-out; Table 13 analyzes trough lay-out and springhouse construction date. Figure 6 shows trough lay-out distribution in the county.

TROUGH DIMENSIONS

Twenty-three of twenty-eight (82%) springhouses with intact trough widths have a trough width between sixteen and twenty-four inches. Twenty-four of twenty-six (92%) springhouses with intact trough depths have a trough depth between six and eighteen inches (see Table 14). These dimensions agree with the assumption of predominantly small dairying components on family farms. A trough twenty-four inches wide and eight inches deep could hold two, one-gallon crocks side-by-side.

FOUNDATION

Thirty-four (68%) springhouses have poured concrete foundations; ten (20%) have coursed rubble foundations; four (8%) are concrete block; and one (2%) each is of frame or log construction, respectively (see Table 15). The widespread use of poured concrete in springhouse construction beginning at the turn of the twentieth century is a good indicator of

Table 12. Springhouse Trough Lay-outs in Montgomery County

Trough Lay-out	Number	Percentage of Total
Unable to Determine	18	36
Front to Back/ Front-Gabled	11	22
Back Wall/ Side-Gabled	11	22
L-Shape/ Front-Gabled	4	8
Back to Front/ Front-Gabled	2	4
L-Shape Side-Gabled	2	4
Perpendicular/ Front-Gabled	1	2
Central/ Side-Gabled	1	2
	50	100

Table 13. Springhouse Trough Lay-outs and Construction Dates in Montgomery County

Trough Lay-out	Number	Construction Date
Front to Back/ Front-Gabled	11	1800-1950
Back Wall/ Side-Gabled	11	1800-Present
L-Shape Front-Gabled	4	1900-25
Back to Front/ Front-Gabled	2	1925-50
L-Shape/ Side-Gabled	2	1900-50
Perpendicular/ Front-Gabled	1	1925-50
Central/ Side-Gabled	1	1925-50
	32	

Table 14. Springhouse Trough Dimensions in Montgomery County

Trough Width (")	Number	Percentage of Total
16	2	7
18	8	28.5
22	5	18
24	8	28.5
26	1	3.5
27	1	3.5
28	1	3.5
30	1	3.5
39	1	3.5
	28	100

Trough Depth (")	Number	Percentage of Total
4	1	4
6	3	11.5
7.5	1	4
8	8	31
9	1	4
10-15	8	31
16-19	4	15
	26	100

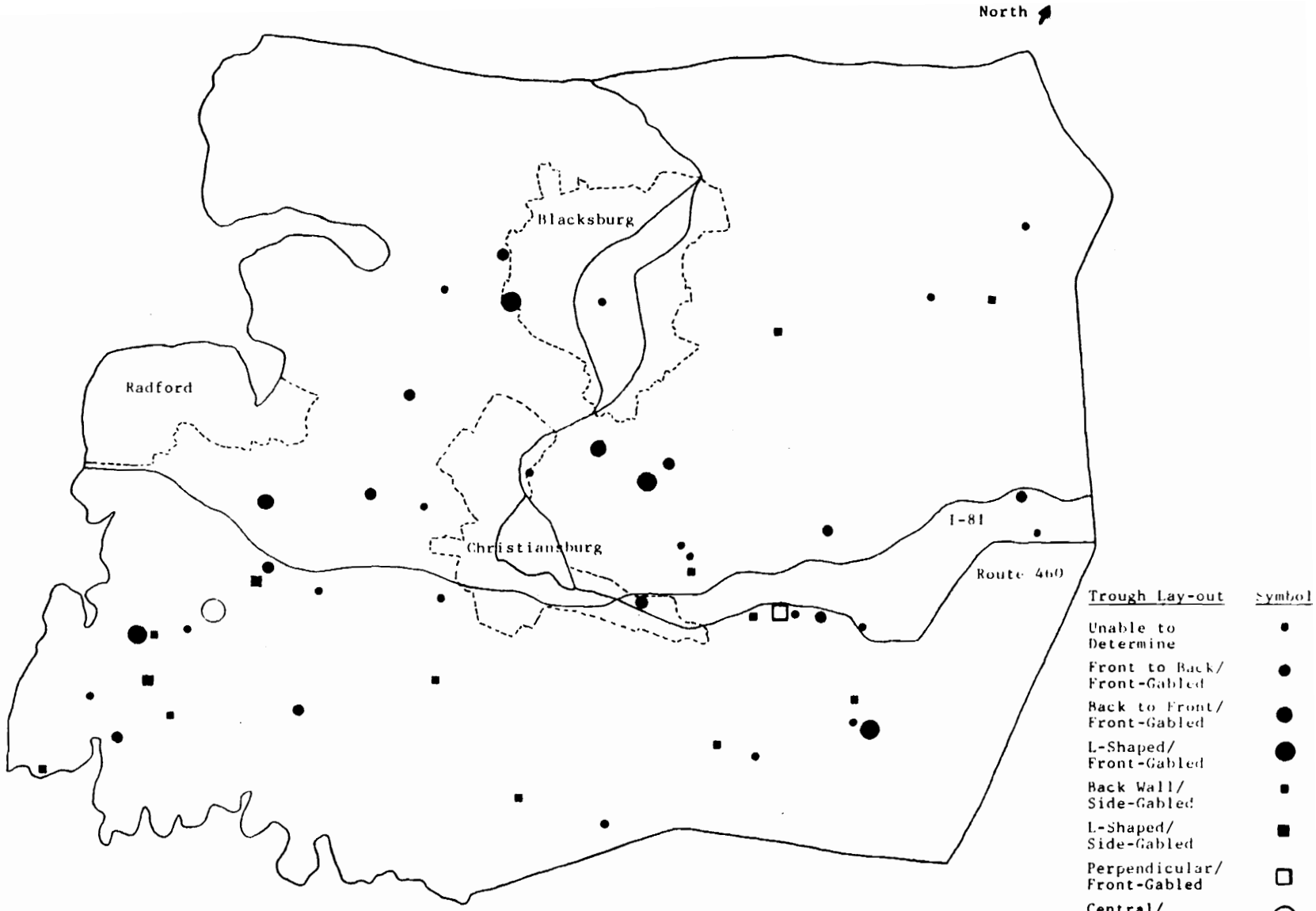


Figure 6. Distribution of Springhouse Trough Lay-outs in Montgomery County

Table 15. Springhouse Foundations in Montgomery County

Materials	Number	Percentage of Total
Poured Concrete	34	68
Coursed Rubble	10	20
Concrete Block	4	8
Frame	1	2
Log	1	2
	50	100

its perceived advantages over traditional foundation materials such as stone or brick. Concrete is adaptable to the contours of the terrain, and it is relatively easy to pour concrete in and around water. Concrete is also easy to clean, and durable if mixed and poured properly.

FLOORING

Forty-three (86%) springhouses have poured concrete floors; three (6%) have earthen floors (60-102, 60-235, 60-346); two (4%) have a combination of stone and poured concrete floors (5, 12); and one (2%) has a stone floor (66-417). Table 16 incorporates information on springhouse flooring.

Two of the three earthen floors are in log springhouses, and tamped earth was probably the original floor material for most nineteenth-century springhouses. All twentieth-century springhouses but one (60-102) have poured concrete floors. Of the nine nineteenth-century springhouses, four (44%) have poured concrete floors. These buildings were altered anywhere from twenty-five to seventy-five years after being constructed. These four structures--among the oldest springhouses in the county--were still being used and adapted decades after they were built.

Table 16. Springhouse Flooring in Montgomery County

Materials	Number	Percentage of Total
Poured Concrete	43	86
Earth	3	6
Poured Concrete and Stone	2	4
Stone	1	2
Unable to Determine	1	2
	50	100

NUMBER OF STORIES

Forty-six (92%) springhouses have a single story, while four (8%) have a second floor (60-84, 60-121, 150-100-11, 4); see Table 17. The predominance of one-story springhouses suggests that the uses of these buildings were very specific: to protect water supplies, and to store and cool perishables. Even the few two-story springhouses were generally used for the same purposes as their one-story counterparts. The second floor in the two-story buildings was used primarily for storage, and not for cooking or laundering, as none of the two-story buildings have flues.

STAIRS

The number of stairs usually reflects the terrain and the builder's concern with economy and efficiency. Thirty-two (64%) springhouses have no steps; eleven (22%) have one or two; six (12%) have three or four; and one (2%) has seven (see Table 18). Of the eighteen springhouses with stairs, four (22%) have both interior and exterior stairs (see Table 19).

Table 17. Number of Stories in Springhouses in Montgomery County

Number of Stories	Number	Percentage of Total
1	46	92
2	4	8
	50	100

Table 18. Number of Stairs in Springhouses in Montgomery County

Number of Stairs	Number	Percentage of Total
0	32	64
1	6	12
2	5	10
3	4	8
4	3	6
7	1	2
	50	100

Table 19. Location of Stairs in Springhouses in Montgomery County

Location of Stairs	Number	Percentage of Total
None	32	64
Exterior	8	16
Interior	6	12
Exterior and Interior	4	8
	50	100

FLUES

Two (4%) springhouses (60-1, 60-360) have flues (see Table 20). The small number of springhouses with flues suggests that these buildings were used primarily to store perishables and protect drinking water supplies. Other buildings may have been used for cooking and storing meat.

ENCLOSURE

STRUCTURAL SYSTEM

The most common structural system is frame (both horizontal and vertical), and it was found on nineteen (38%) springhouses. Frame and poured concrete were used together nine (18%) times, while five (10%) springhouses are of poured concrete. Concrete block was used eight (16%) times, and seven (88%) of these buildings are in central Montgomery County near town limits. Only two (4%) springhouses of coursed rubble were located (60-318, 60-417), and both date from the first half of the nineteenth century. Three (6%) log springhouses were surveyed, all with v-notched corners. One (2%) springhouse, located in the extreme south-west corner of the county, is of brick (60-94). Two (4%) coursed rubble and log springhouses were lo-

Table 20. Number of Flues in Springhouses in Montgomery County

Number of Flues	Number	Percentage of Total
0	48	96
1	2	4
	50	100

cated (150-100-11, 5), and one (2%) springhouse is of poured concrete and coursed rubble (12). Table 21 breaks down springhouses according to structural system; Figure 7 shows the distribution of structural systems in the county.

It appears that older springhouses of log may have disappeared at a disproportionately faster rate than those of masonry. The three log springhouses, and both coursed rubble and log springhouses, have v-notched corners. According to John Morgan (1990), the v-notch was used "especially...[in] houses and more substantial barns and outbuildings" (p.11). The v-notch was the dominant notch type in the Shenandoah Valley (Morgan, 1990), and it was carried west and south through the Valley of Southwest Virginia and into Tennessee (Morgan, 1990).

Log and coursed rubble were found only on nineteenth-century sites, and the apparent nineteenth-century preference for log and coursed rubble was superseded in the early 1900s by lighter, less labor-intensive materials such as frame and poured concrete. The presence of late-nineteenth-century log springhouses suggests that it was difficult for some families to obtain sawmill lumber in the late 1800s.

Table 21. Structural Systems of Springhouses in Montgomery County

Materials	Number	Percentage of Total
Frame	19	38
Frame and Poured Concrete	9	18
Concrete Block	8	16
Poured Concrete	5	10
Log	3	6
Coursed Rubble	2	4
Log and Coursed Rubble	2	4
Poured Concrete and Coursed Rubble	1	2
Brick	1	2
	50	100

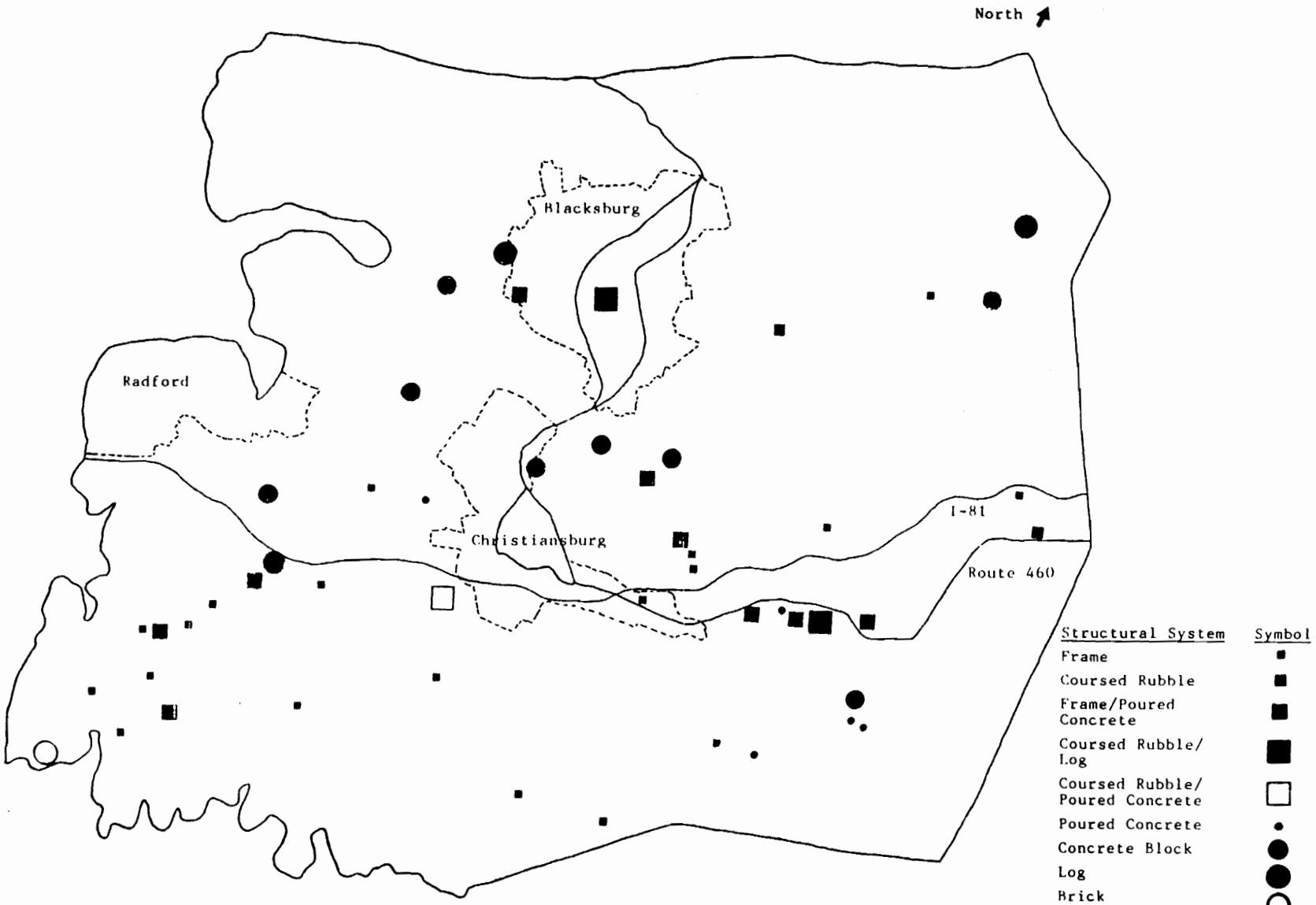


Figure 7. Distribution of Springhouse Structural Systems in Montgomery County

INTERIOR FINISH

Forty-six (92%) springhouses have unfinished interiors (the studs, purlins, rafters, roof joists, sill plates, and/or concrete are exposed), while one (2%) springhouse has finished walls that appear to an addition (1). The interior finishes of three (6%) springhouses could not be determined (see Table 22). The predominance of unfinished interiors is indicative of the utilitarian nature of these buildings. The builders were concerned with providing a basic enclosure for the water source, and aimed to achieve it with a minimum investment of materials and labor.

DOORS

Thirty-nine (78%) springhouses have one door; ten (20%) have two doors; and one (2%) has three doors (60-121). Table 23 incorporates information on doors. The small number of doors per springhouse reflects the small size and undifferentiated rectangular plan of most springhouses. The single springhouse with three doors is unique for its large, two-story plan and original landscaped pool with a stone border.

Table 22. Interior Finishes of Springhouses in Montgomery County

Finish	Number	Percentage of Total
Exposed	46	92
Wall Sheathing	1	2
Unable to Determine	3	6
	50	100

Table 23. Number of Doors in Springhouses in Montgomery County

Number of Doors	Number	Percentage of Total
1	39	78
2	10	20
3	1	2
	50	100

The location of the door varies according to roof shape. On front-gabled springhouses, the door is on the short side of the building. On side-gabled springhouses, the door is on the long side of the building, closest to the water source and opposite the trough.

WINDOWS

The small number of windows per springhouse, like the small number of doors, reflects an economic building philosophy. Additionally, fewer windows reduce the amount of light that enters the building and help keep the interior cool and shaded. Thirty (60%) springhouses have no window or one window; ten (20%) have two windows; and seven (14%) have three or more windows. Three (6%) springhouses have lattice screen in place of windows (see Table 24). Of seventeen windows with window materials intact, ten (59%) have a fixed sash (pane sizes vary); four (24%) have wire screen or mesh; and three (17%) have wooden bars. The use of lattice, wire screen and mesh, and wooden bars suggest that openings were important for ventilation purposes. These materials were also cheaper and easier to install than glass panes.

The location of windows varies according to roof shape and

Table 24. Number of Windows in Springhouses in Montgomery County

Number of Windows	Number	Percentage of Total
0	10	20
1	20	40
2	10	20
3	6	12
5	1	2
Lattice Screen	3	6
	50	100

the location of the door. On front-gabled springhouses, the door is in the short (front) wall, and the window is in the opposite (back) wall. In most side-gabled springhouses, the door and windows are on the same or adjacent wall. Windows were rarely placed over troughs, unless the trough was L-shaped.

ROOF SHAPE

Although forty-six (92%) springhouses have some form of a gable roof, fourteen (30%) of these are side-gabled (as opposed to front-gabled). Three (6%) springhouses have shed roofs (60-13, 60-549, 8); and a late springhouse in the Fairview vicinity (13) was the only building surveyed with a hip and gable roof (see Table 25). Both front- and side-gabled roofs were used on springhouses built from 1800 through the 1970s. Variations of the gable roof, shed roof, and hip roof were found only on springhouses built after 1900 (see Table 26). The gable roof was presumably used on springhouses for its economy, ease of construction, and potential for additional storage space under the gable.

Regardless of roof shape, springhouses were consistently oriented with one gable facing toward or into the water source. In the case of front-gabled springhouses, this

Table 25. Roof Shape of Springhouses in Montgomery County

Roof Shape	Number	Percentage of Total
Front Gable	30	60
Side Gable	14	28
Cross Gable	2	4
Total Gable	46	92
Shed	3	6
Gable and Hip	1	2
	50	100

Table 26. Springhouse Age and Roof Shape in Montgomery County

Construction Date	Number	Number with Gable Roof	Percentage of Total
Prior to 1900	9	9	100
After 1900	41	35	85
	50		

allowed an overhang to cover the springbox. Similarly, in most springhouses, the trough runs parallel to the gable ridge, regardless of the direction of the front door. This suggests that the water source was a primary factor in orienting the springhouse.

ROOF OVERHANG

Twenty-two (44%) springhouses have overhangs and twenty-eight (56%) do not. Thirteen (59%) overhangs are between five and seven feet long. The extremes include a one-foot overhang on a ten-foot springhouse (60-448), and an eleven-foot overhang on a nine-foot springhouse (60-392). Table 27 incorporates information of the lengths of roof overhangs. The length of the overhang is proportional to the size of the springbox. The overhang provides protection for the springbox as well as an extended work space and an area for drying crocks and untensils. Fifteen (68%) overhangs cover a springbox; there are no springboxes unprotected by an overhang.

ROOF MATERIALS

Thirty-six (72%) springhouses have some form of metal roofing (twenty-five, or 50%, have standing-seam metal roofs). Another eleven (22%) have asphalt paper or shingles, and

Table 27. Roof Overhangs on Springhouses in Montgomery County

Length (')	Number	Percentage of Total
0	28	56
1-4.5	5	10
5-7	13	26
7.5-16	4	8
	50	100

two (4%) have wooden shingles that appear original to the buildings (5, 10); see Table 28. Standing-seam metal has been an established roofing material for rural structures, including houses, since the mid- to late-nineteenth century. The incidence of newer roofing materials (corrugated metal, sheet metal, and asphalt paper and shingles; 44% of the total) suggest that these buildings are being repaired, or at least re-roofed, and are important in some way to their owners.

AESTHETIC EFFECT

SITE

The springhouse is unique among outbuildings because it is geographically tied to specific areas. Springhouses are typically built over or adjacent to a spring source; so the location of the building itself is predetermined. The builder had to adapt the springhouse dimensions, foundation, and overhang to the contours of the land and the specifics of the spring source. Springhouse 5 is a good example of how topography affected design: an unusually large spring necessitated a 12x16' overhang and retaining walls of coursed rubble. These pre-existing design conditions encouraged builders to fit springhouses to the sites; so like its site,

Table 28. Roof Materials of Springhouses in Montgomery County

Materials	Number	Percentage of Total
Standing-Seam Metal	25	50
Corrugated Metal	10	20
Asphalt Shingles/ Asphalt Paper	11	22
Wood Shingles	2	4
Sheet Metal	1	2
Frame	1	2
	50	100

each springhouse is unique, and uniquely adapted to its surroundings.

WATER

Another characteristic of springhouses that distinguishes them from most farm structures is water. The springhouse was designed to enclose one of nature's most destructive and unpredictable elements. The builder had to design a building that would allow water to pass through it in a controlled manner, and also serve to cool perishables. Springhouse 60-59 achieved these goals with elegant means: a thirty-nine-inch wide trough regulates water flow with three rectangular concrete pieces that have openings in them. In springhouse 60-71, the trough is "stepped," so water flows quickly through the trough and cannot back up into the water source. The effect of water flowing continuously through a trough is pleasing visually and acoustically, and can be likened to the effect produced by a fountain.

MATERIALS

The visual appeal of springhouses is due in part to the materials used in construction. Many springhouses incor-

porate a number of materials, colors, and textures that help create lively, complex buildings. A good example of this is springhouse 60-70, which has a corrugated metal roof, white frame gable ends, log walls, a coursed rubble foundation, a poured concrete floor, and a brick springbox. Many springhouses combine board-textured poured concrete foundations with frame buildings for practical reasons (it allowed the foundation, floor, and trough to be poured together, and prevented the frame section from contact with water); and the final result often turned out to be successful in terms of its visual appeal.

PROPORTIONS

In addition to construction materials, the appeal of springhouses in the rural landscape relies on size, massing, and roof shape. Springhouses are among the smallest structures on farms, and many in this survey contain less than one-hundred square feet. A small but well-constructed outbuilding conveys the pride and attention to detail that the builder invested in his or her property. Connected to size are massing and roof shape. For example, the gable roof, overhang, and placement of doors and windows on springhouse 60-392 allow the building to be read from a distance as a one-room structure with a specific function.

CHAPTER 4. CONCLUSION

Springhouses constituted an integral element of many farmsteads in Montgomery County from the early 1800s until the mid-twentieth century. Although there are springhouses on several of the oldest farm sites in the area, some early sites do not include springhouses. This may be due in part to the accidental survival rate of building types. It also suggests that other methods were used to store foods and protect water supplies. Wells and streams may have been used when a spring was not accessible, and perishables may have been stored in cellars.

The form and design of springhouses remained consistent, but significant changes occured in size, number, construction materials, and functions, as a result of regional economic, social, and technological developments. Springhouses in the twentieth century were typically smaller and more numerous than their nineteenth-century counterparts. The apparent nineteenth-century preference for log and stone was superseded in the twentieth century by poured concrete and frame. In addition, springhouses in the twentieth century were used primarily for food storage, not for drinking water supplies. This contributed to the de-

cline of the springbox and overhang.

The introduction of electricity into rural areas in the 1940s meant that springhouses were no longer needed for storing perishables and protecting water supplies, because refrigeration became available. Rural electrification in the post-World War II years was probably the most important factor in the decline of the springhouse as a building type. The 1940s marked the beginning of the end of springhouse construction for domestic use.

The significance of this study is its emphasis on the springhouse, a much-neglected rural building type. This project catalogued existing springhouses in Montgomery County and provided analysis and interpretation of their design, construction, and use. It is the first study of its kind to systematically document the springhouses of an entire county. Further research should examine the characteristics of springhouses as they varied within Virginia, and from state to state. A typological database for domestic outbuildings needs to be developed in order to better understand vernacular architectural history and domestic farm life.

The springhouses of Montgomery County, Virginia, constitute

a significant part of the regional, rural vernacular building tradition, and as such they should be preserved and studied as inseparable elements of North America's domestic farm heritage.

CATALOG OF SPRINGHOUSES SURVEYED IN MONTGOMERY COUNTY, 1993

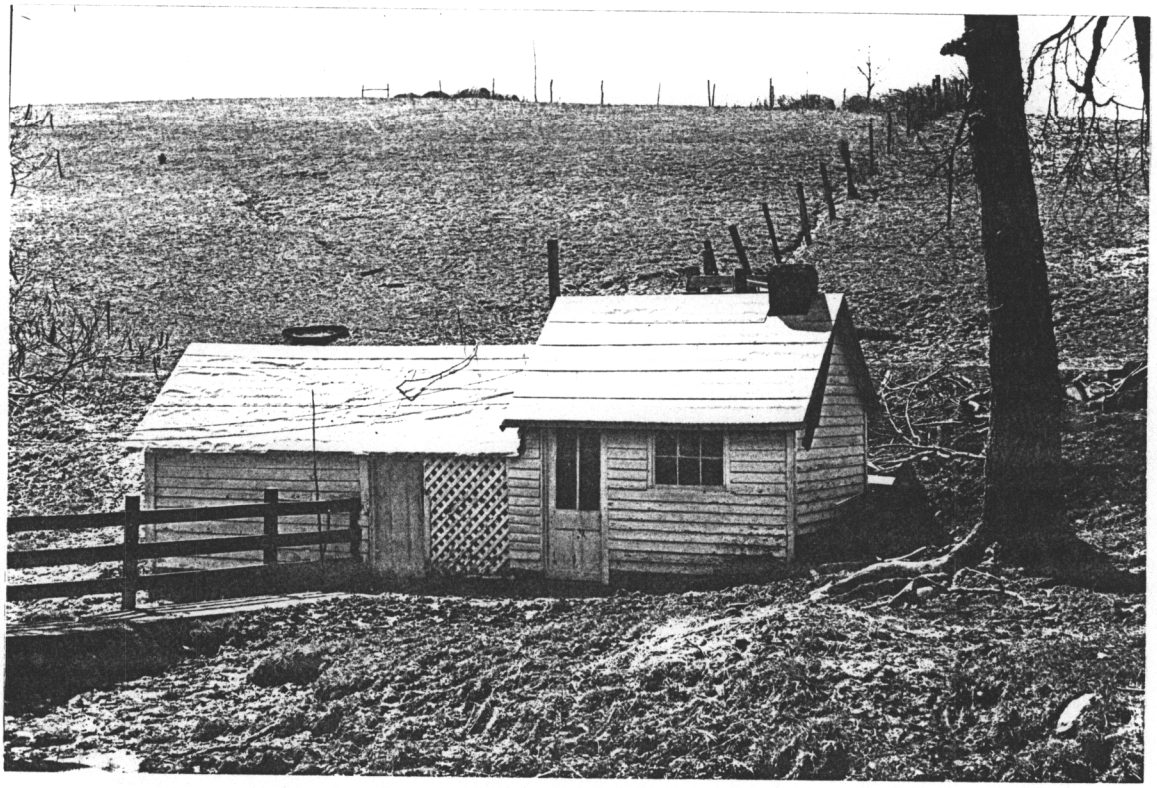
INTRODUCTION

The thirty-four springhouses identified in the Virginia Historic Landmarks Commission Survey of Montgomery County are listed according to their file number (top left). The location and approximate date of construction are also noted. The sixteen springhouses located by the author are numbered 1-16. The text that accompanies each photograph includes information on construction materials, dimensions, trough lay-out, and other features worth noting.

60-1

Huffville Vicinity 1900-25

This frame and poured concrete springhouse is a good example of how this building type was adapted for additional uses. The original building (8x16½') begins at the lattice screen and continues to the left. The addition on the right, an 8x11½' laundry room, makes this one of only two springhouses in the survey with a flue.



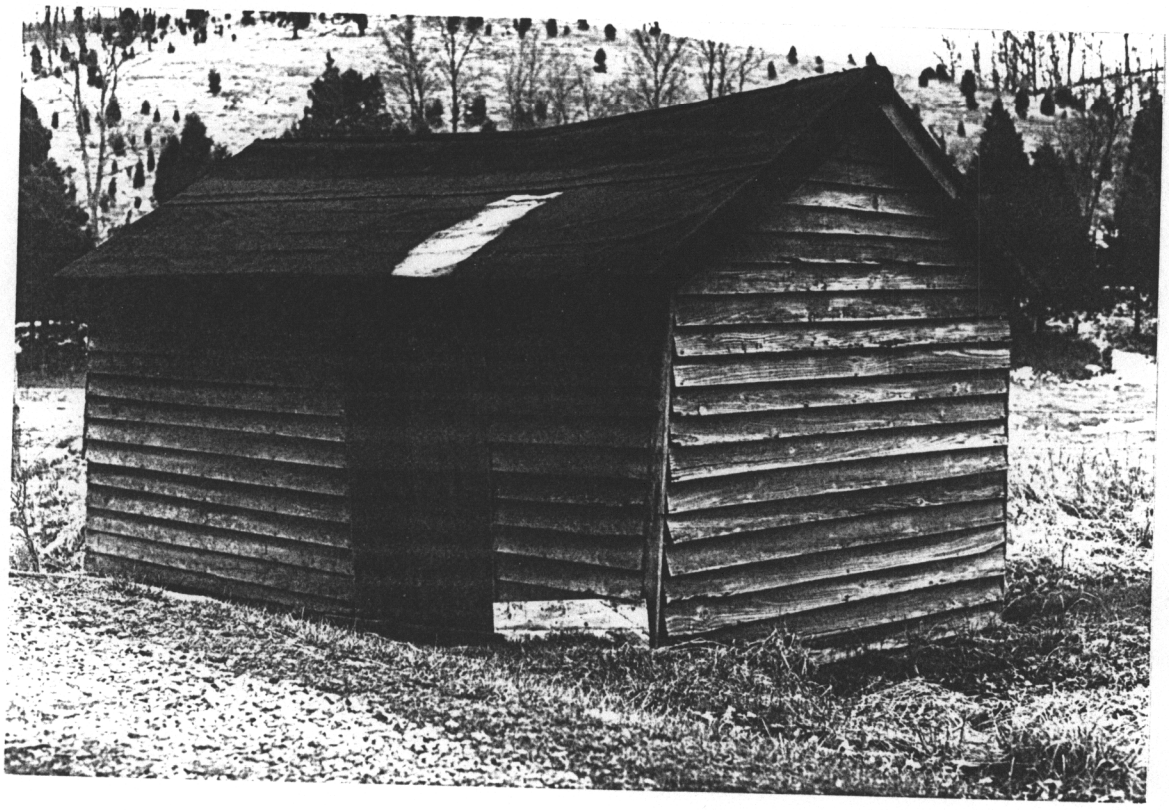
60-13
Christiansburg Vicinity 1925-50

This 7½x10' concrete block springhouse at Yellow Sulphur Springs has a shed roof and a trough that runs from the back of the building to the front along the side wall.

60-29
Rogers Vicinity

1900-25

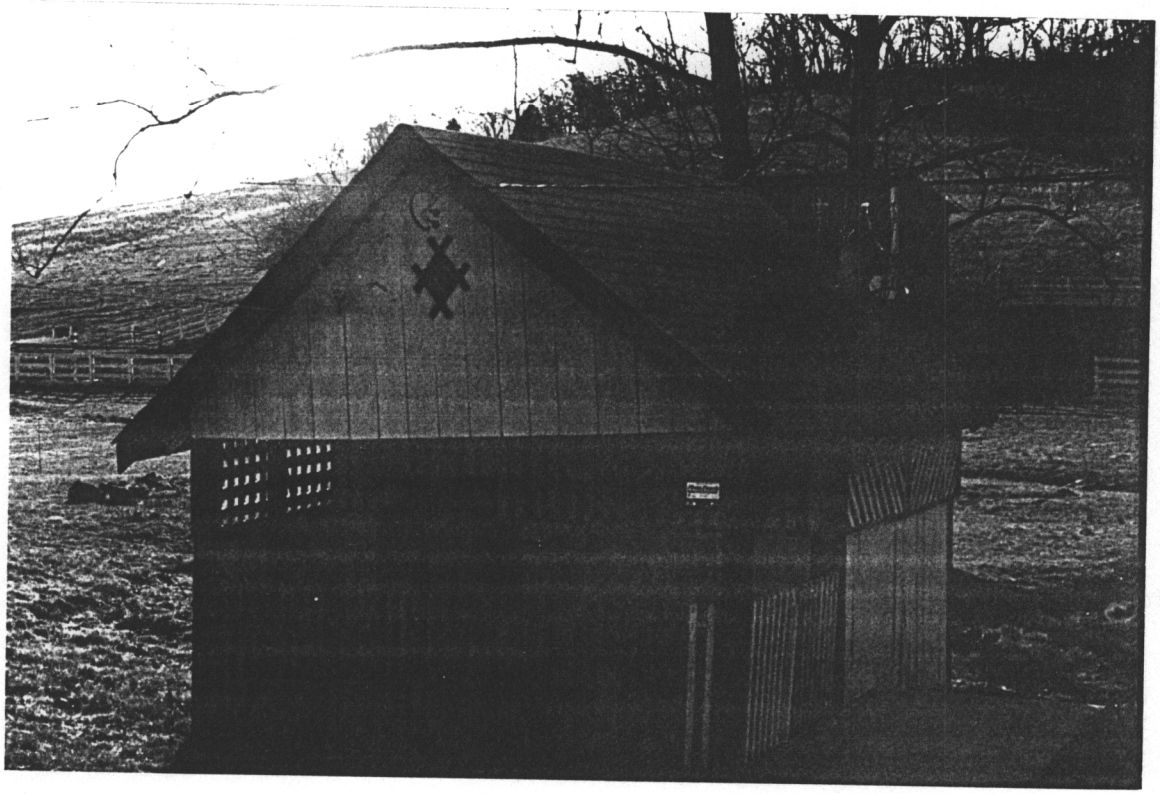
This is a typical small (120 ft²), frame, side-gabled springhouse with a trough that runs across the back wall.



60-59
Riner

1900-25

This robust and well-cared for 12x16' frame springhouse has a two-and-a-half foot high band of lattice that runs around the entire building. The trough is divided into thirds by three-inch wide strips of concrete with openings in them to regulate water flow.



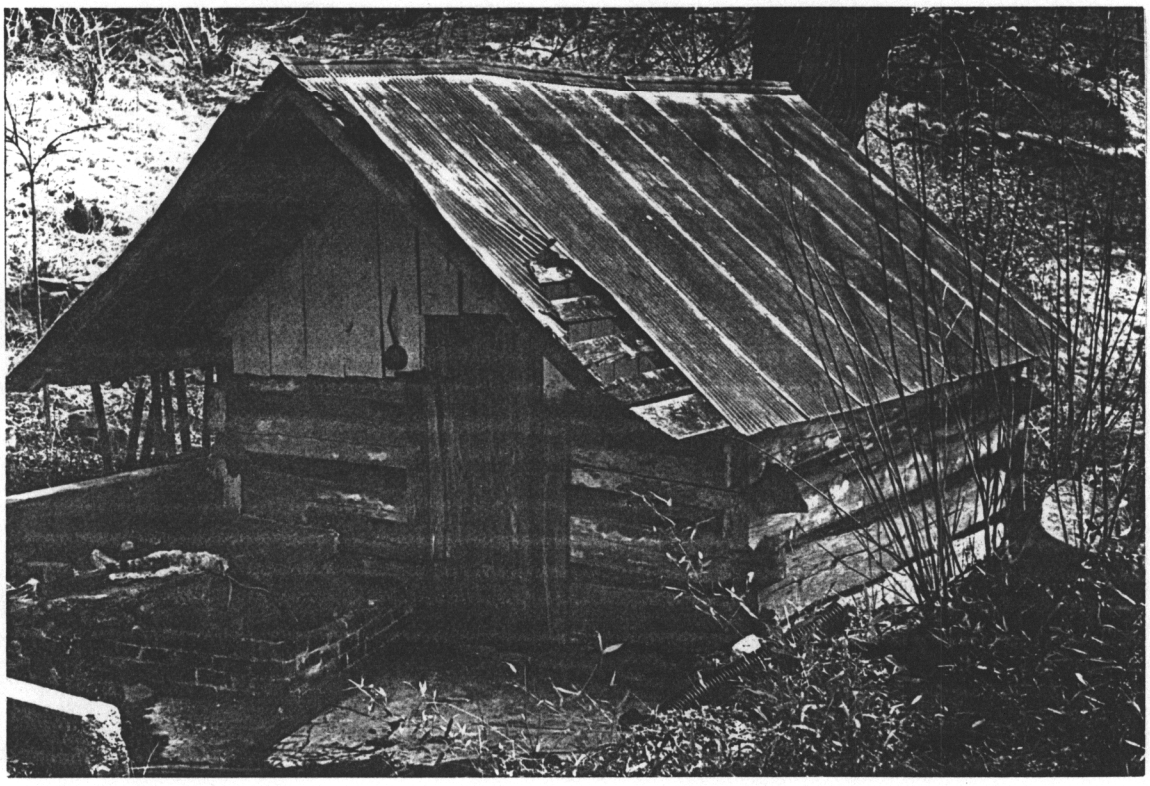
60-69
Riner

1900-25

This small (63 ft²), frame springhouse adjacent to an abandoned house is in poor condition.

60-70
Riner 1875-1900

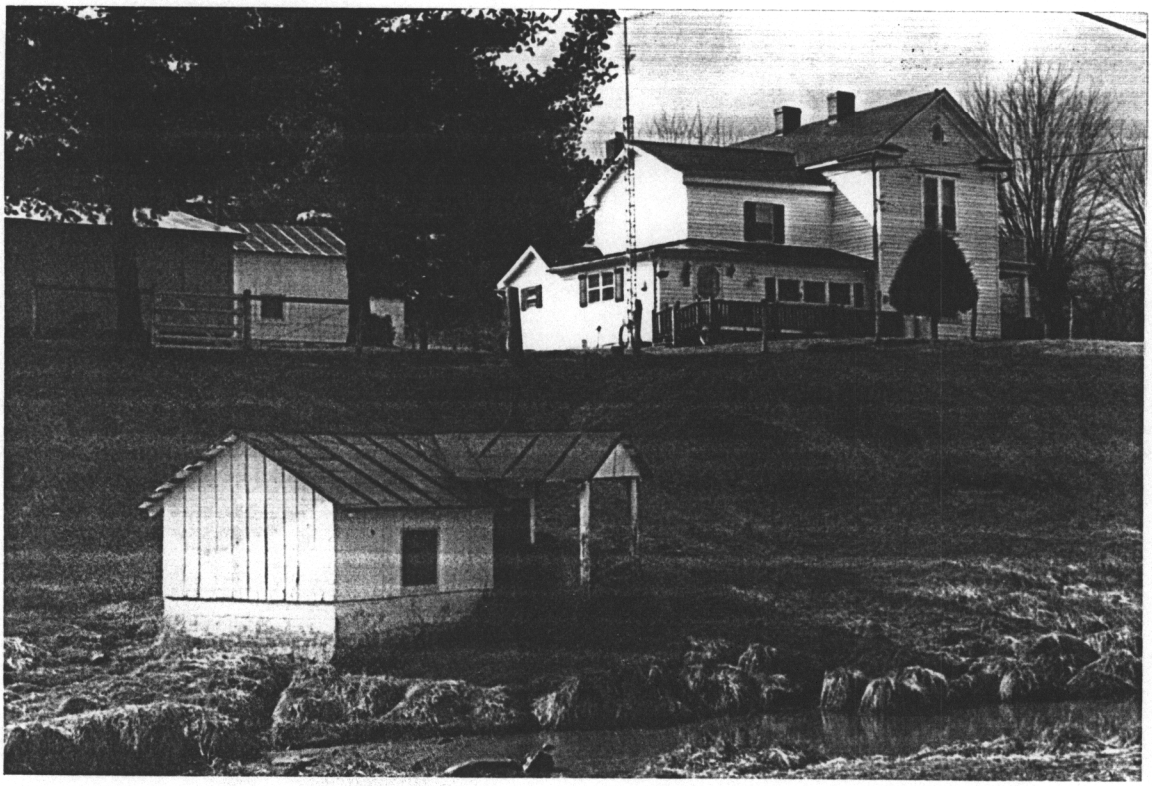
This log building is an early example of a medium-sized (156 ft^2), front-gabled springhouse with a trough that runs from front to back along the side wall. Masonry and poured concrete additions are evident.



60-71
Riner

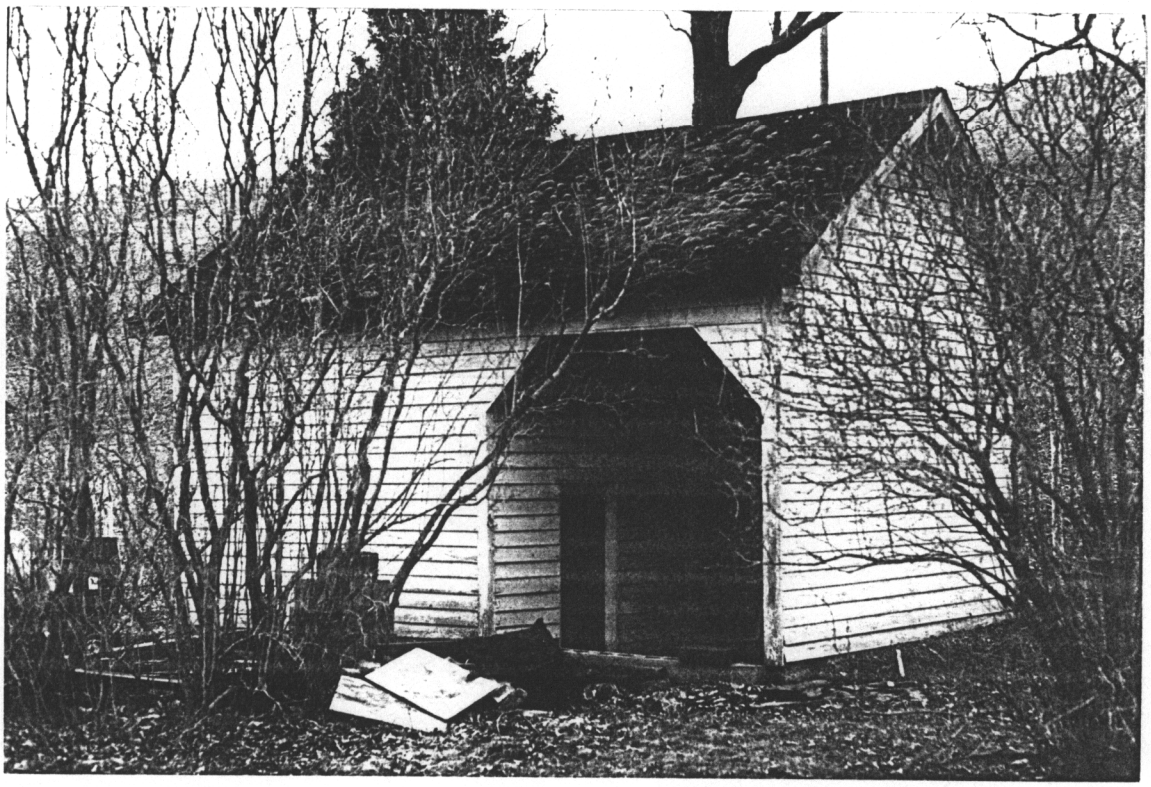
1925-50

This 8x10', frame and poured concrete springhouse has a gable overhang supported by posts, and an L-shaped trough.



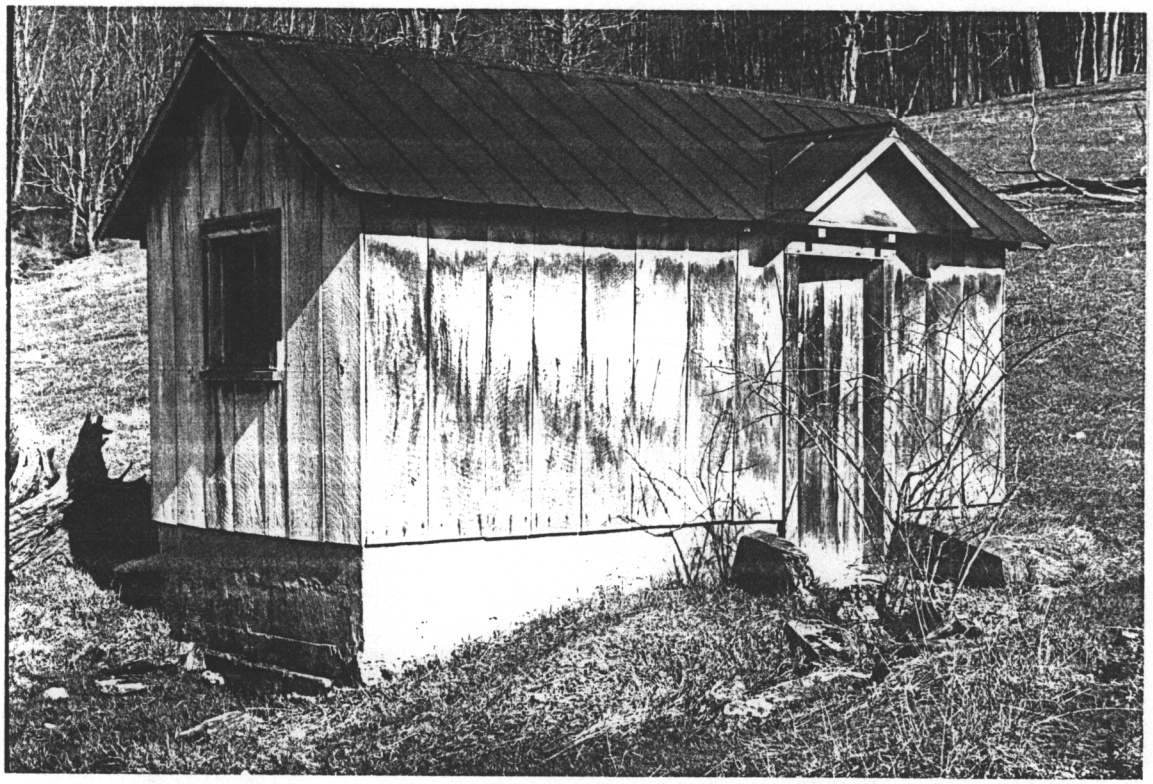
60-84
Childress 1925-50

This frame springhouse at the Bowyer-Trollinger house is notable for its complex, two-story plan, large dimensions (12x20'), and its five-sided entrance. It was the only springhouse surveyed with a central trough.



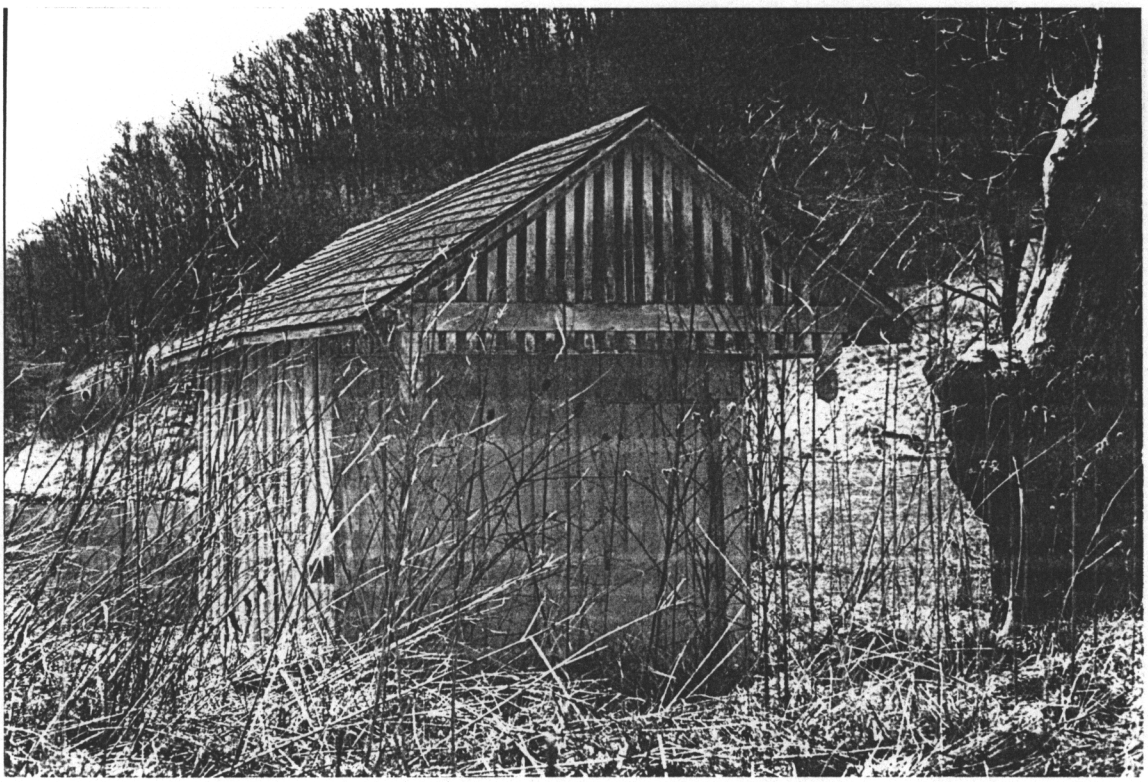
60-91
Childress Vicinity 1900-25

This frame springhouse has a gabled entry, diamond-shaped gable vents, and is one of two side-gabled buildings with an L-shaped trough. Its long and narrow dimensions (8x17') and wide individual clapboards give this springhouse a measure of stateliness.



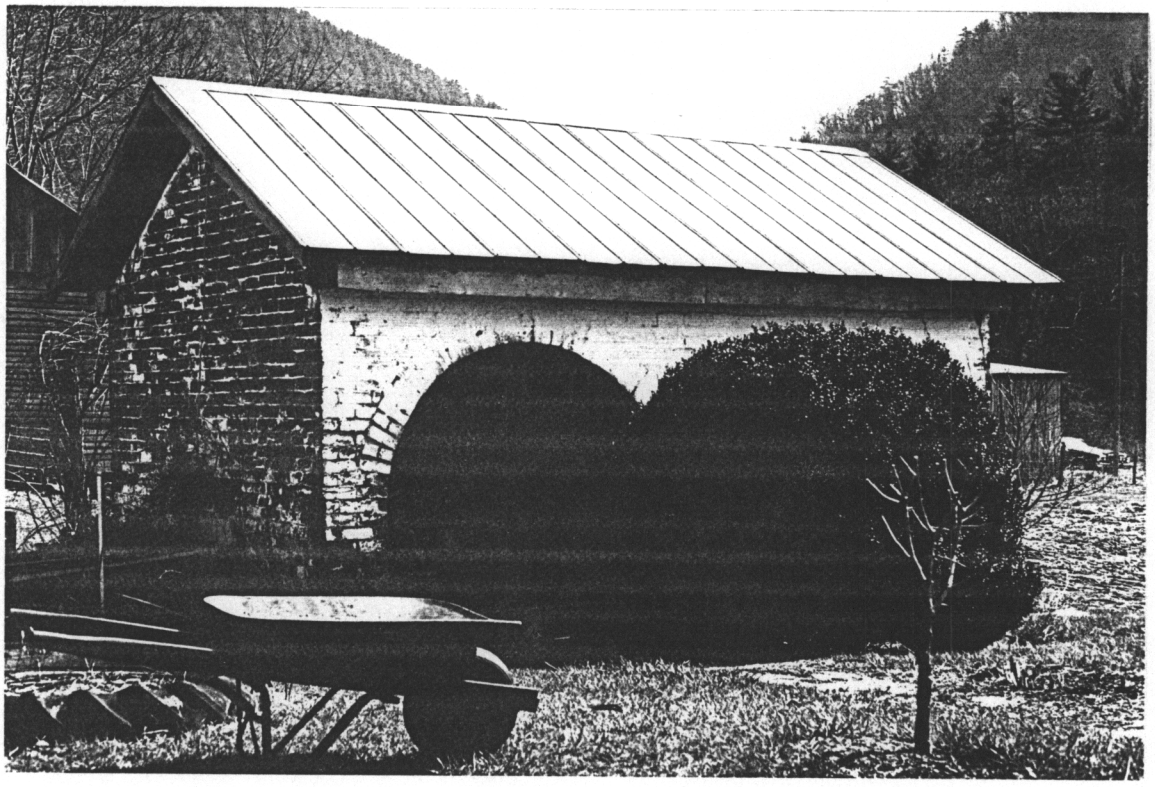
60-92
Childress Vicinity 1900-25

This 8x17', frame springhouse is unique for its decorative gable infill, pendants, and lunette window in the back wall.



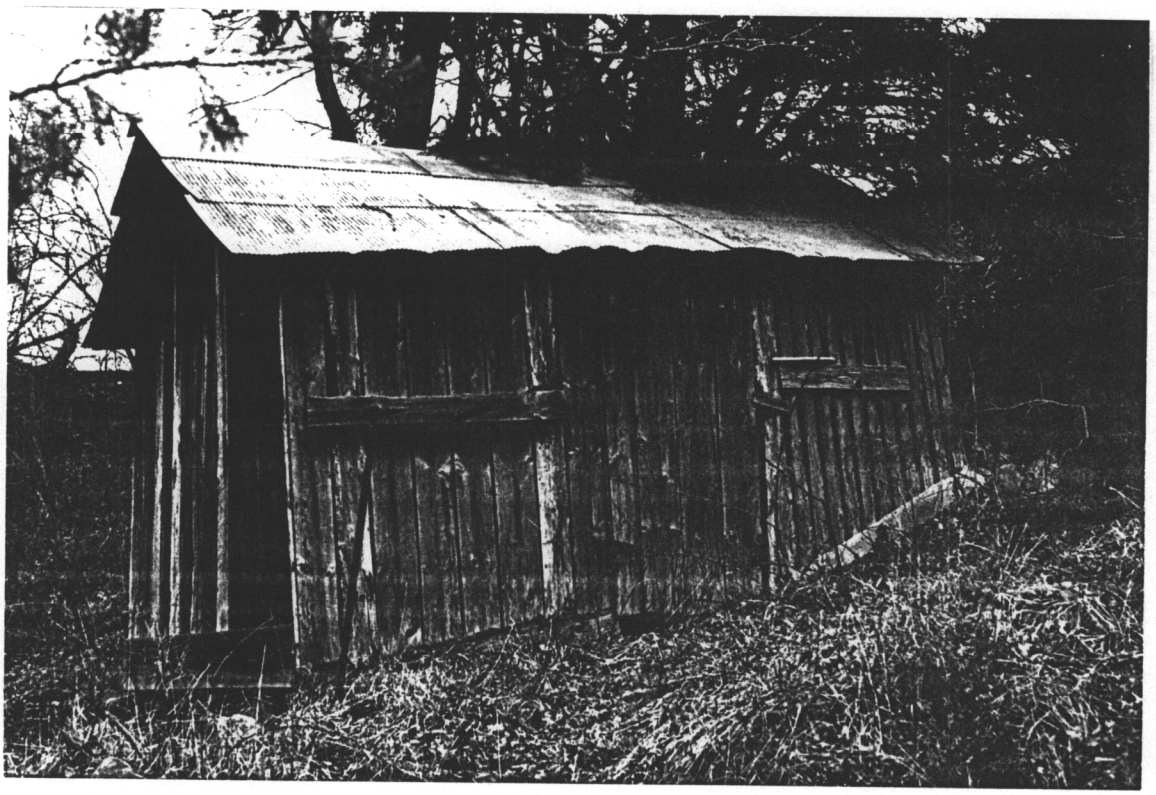
60-94
Childress Vicinity 1825-50

This 11x18' springhouse was the only one surveyed made of brick. It has an unusual 5½x6½' arched entrance, and three windows that light the food storage room. This structure may have originally been a well house.



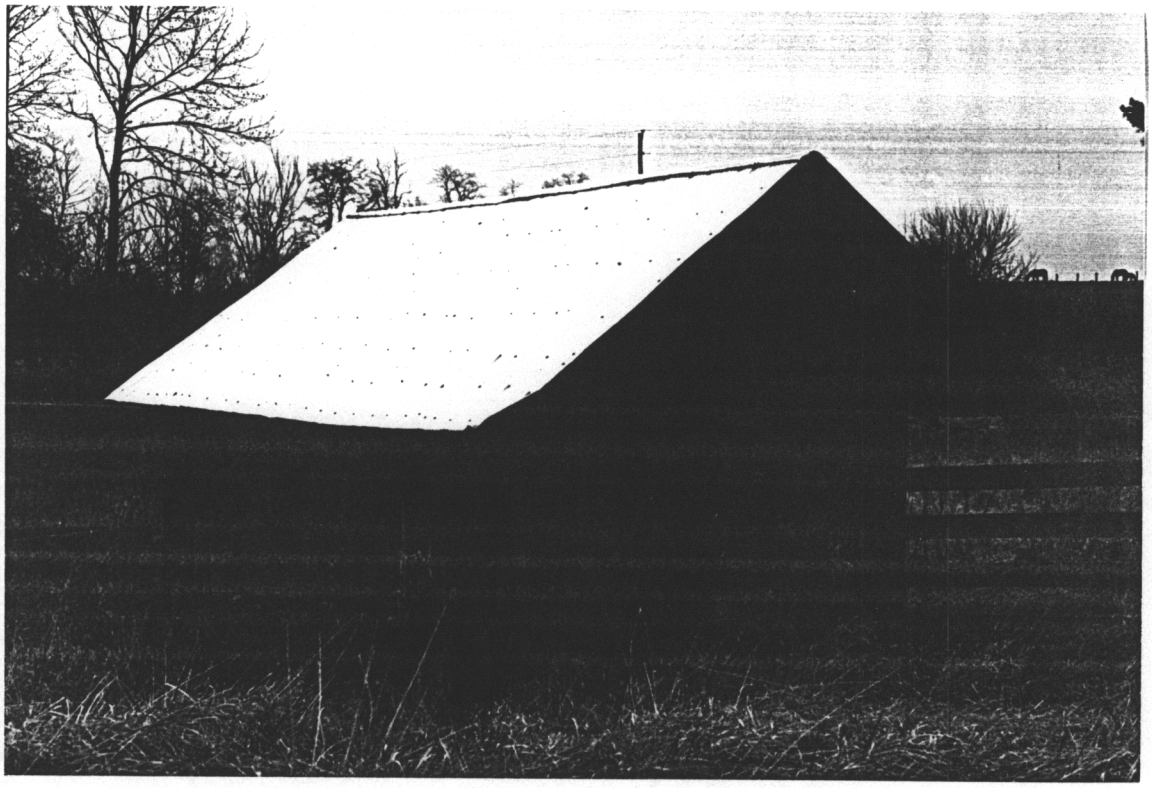
60-102
Childress Vicinity 1900-25

Constructed of frame, with an earthen floor, this 10x12' springhouse has four original shelves on the interior. The springhouse is adjacent to a vacant house and is in poor condition.



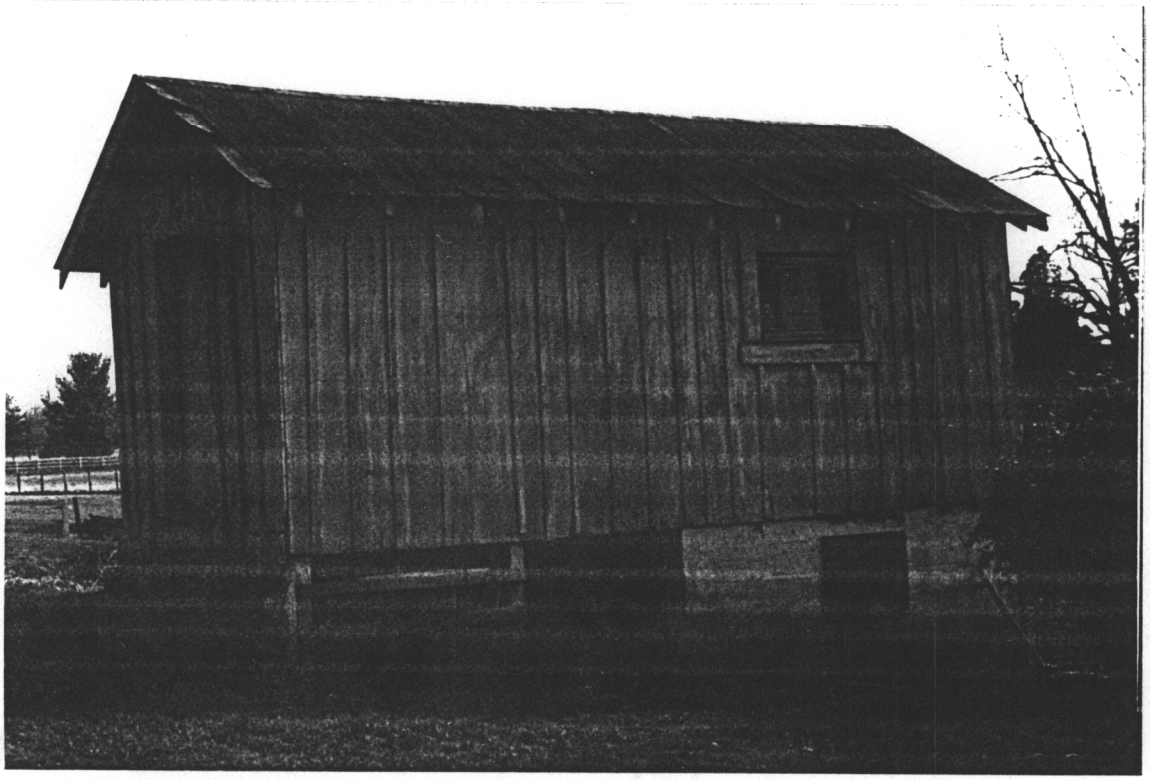
60-120
Childress Vicinity 1900-25

Constructed of frame in the popular gable-front form, the unusual feature of this medium-sized (154 ft²) springhouse is its L-shaped trough.



60-121
Childress Vicinity 1925-50

Distinguished by its two-story plan, this large (304 ft^2), frame and poured concrete springhouse has a complex floor plan and a landscaped pool to the rear.



60-136
Radford Vicinity 1925-50

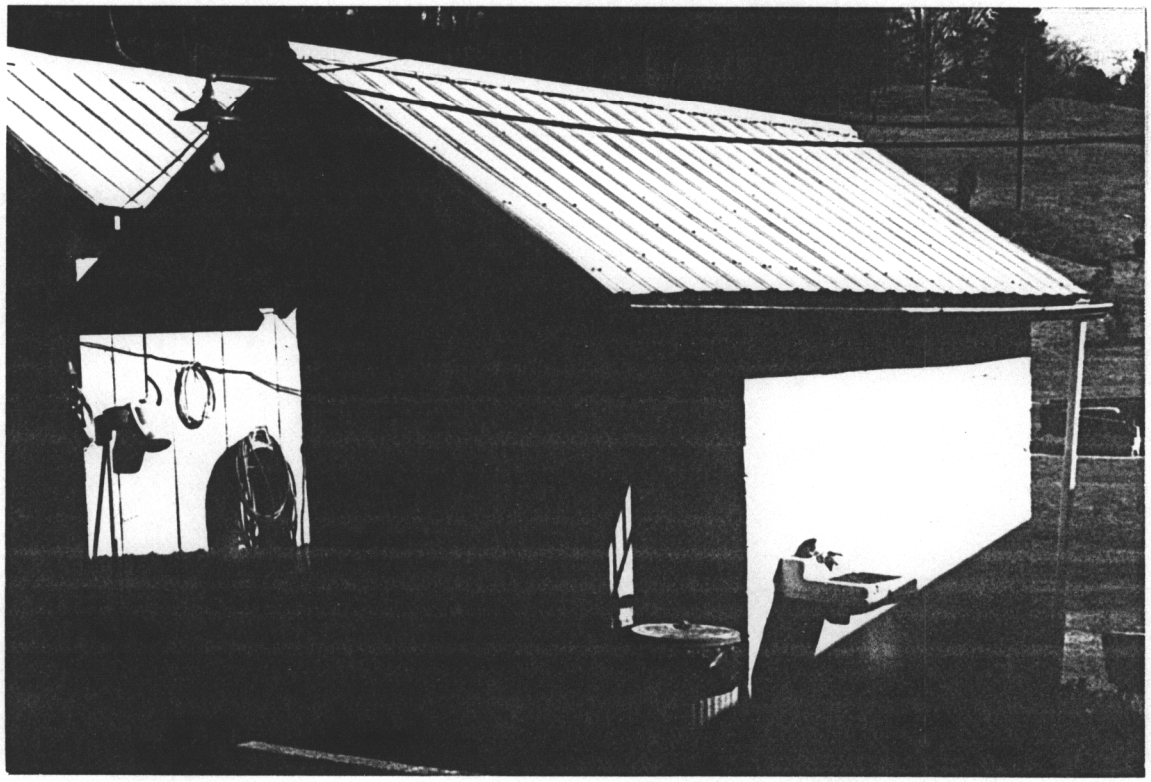
This unpretentious concrete block springhouse measures 9½x11', and is one of two front-gabled buildings with a trough that runs from back to front along the side wall. Note the screen door.

60-142
Christiansburg Vicinity 1900-25

Currently in poor condition, this small (83 ft²), poured concrete springhouse faces out of a gentle slope.

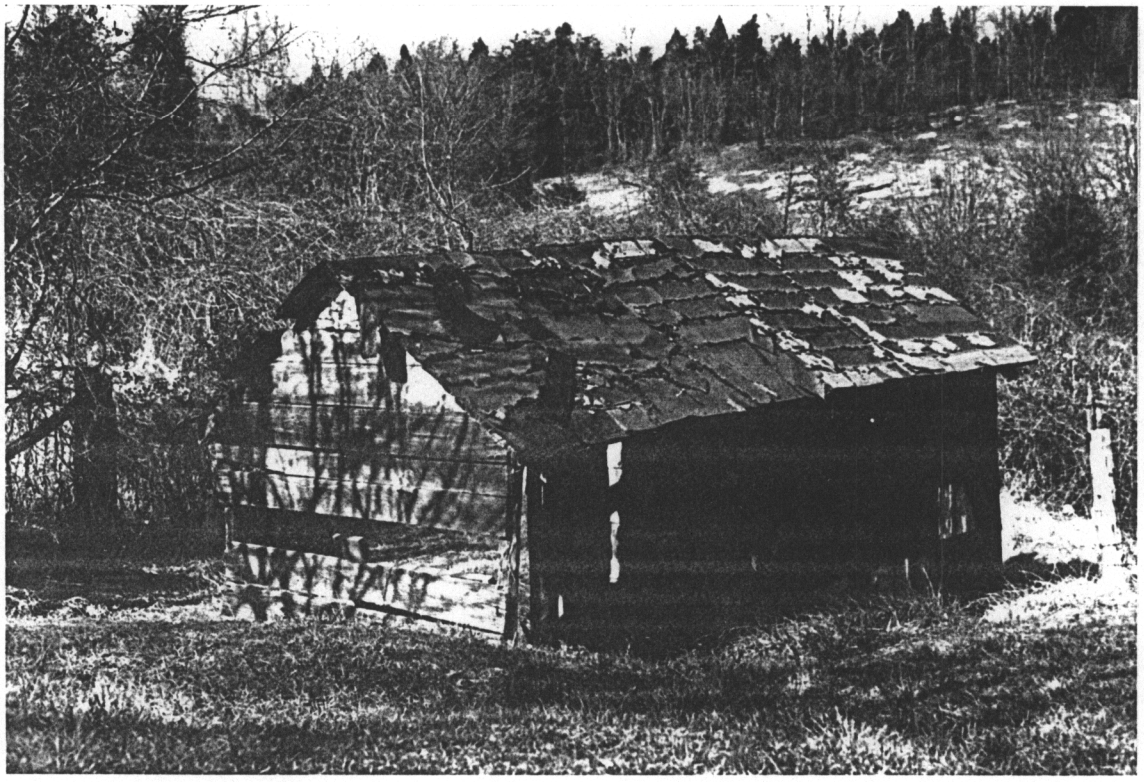
60-152
Vicker Vicinity 1925-50

One of eight surviving concrete block springhouses in the county, this small (80 ft²) building has been adapted for various uses. Note the water fountain at right.



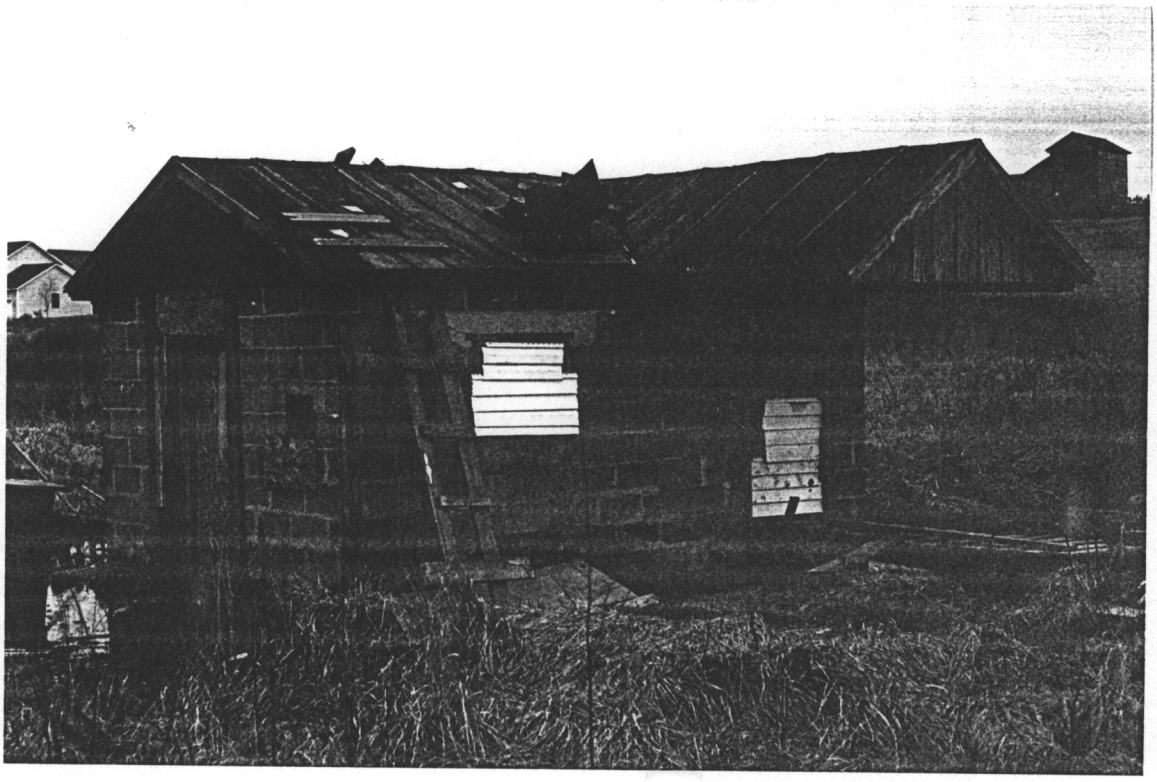
60-180
Christiansburg Vicinity 1900-25

Distinguished by its small size (48 ft^2), this modest frame springhouse was the only one located within Christiansburg town limits.



60-231
Prices Fork Vicinity 1925-50

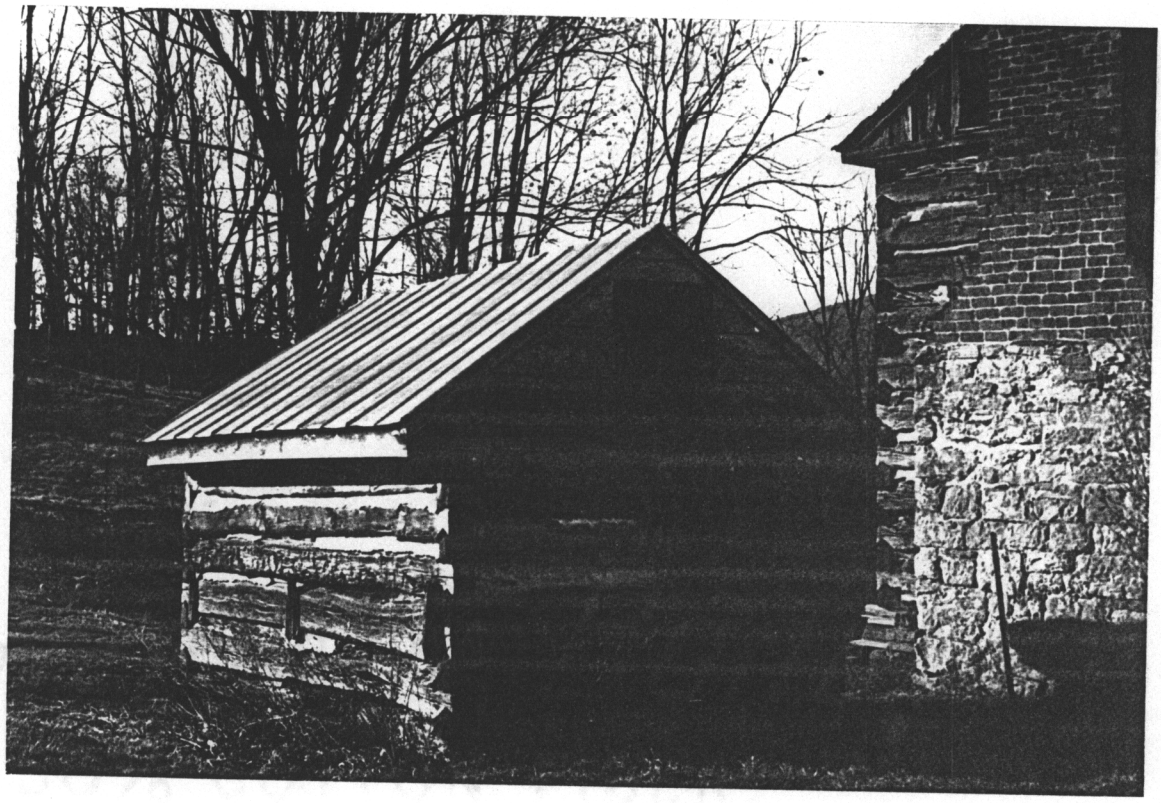
This 10x16', concrete block springhouse has a cross-gabled roof and a seven-foot unsupported overhang. It was the only springhouse located without an adjacent house, and it is in poor condition.



60-235

Prices Fork Vicinity 1800-25

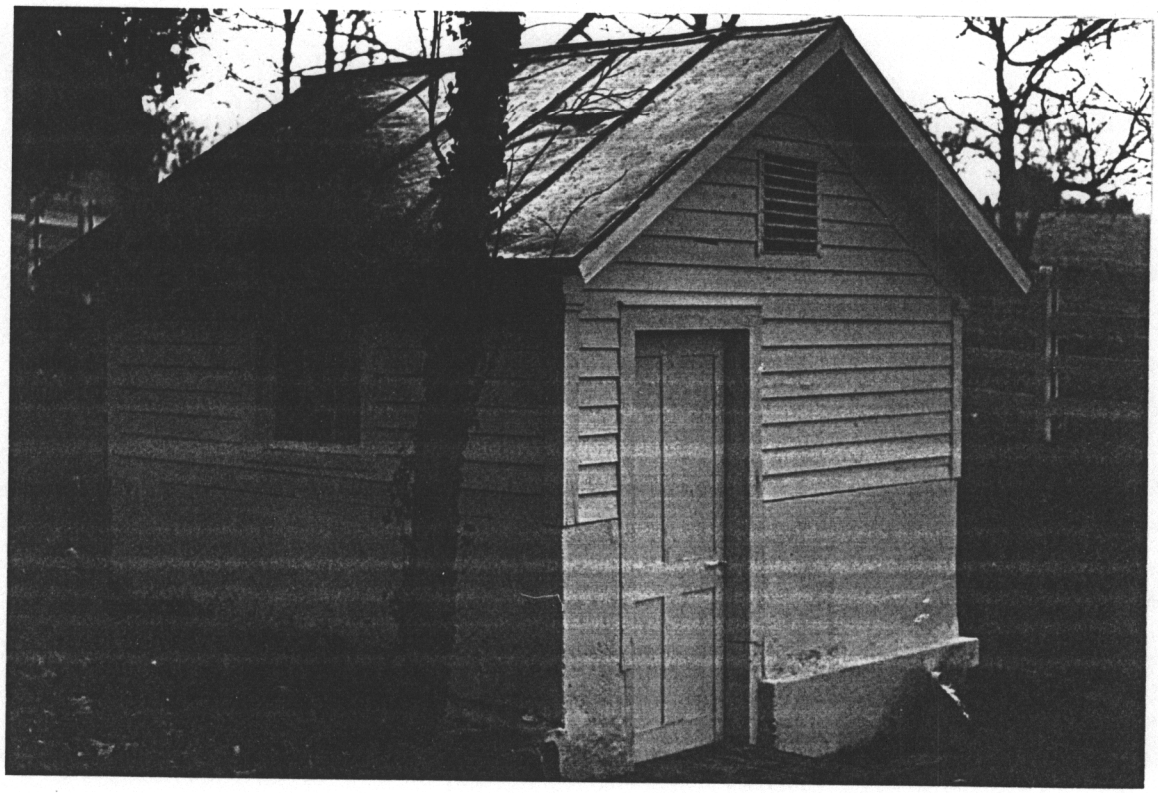
Surviving as the earliest of three log springhouses in the county, this 9x12' building has an earthen floor with a poured concrete trough, and overhead storage space with access through the front gable. It is unusually close to the log kitchen.



60-240

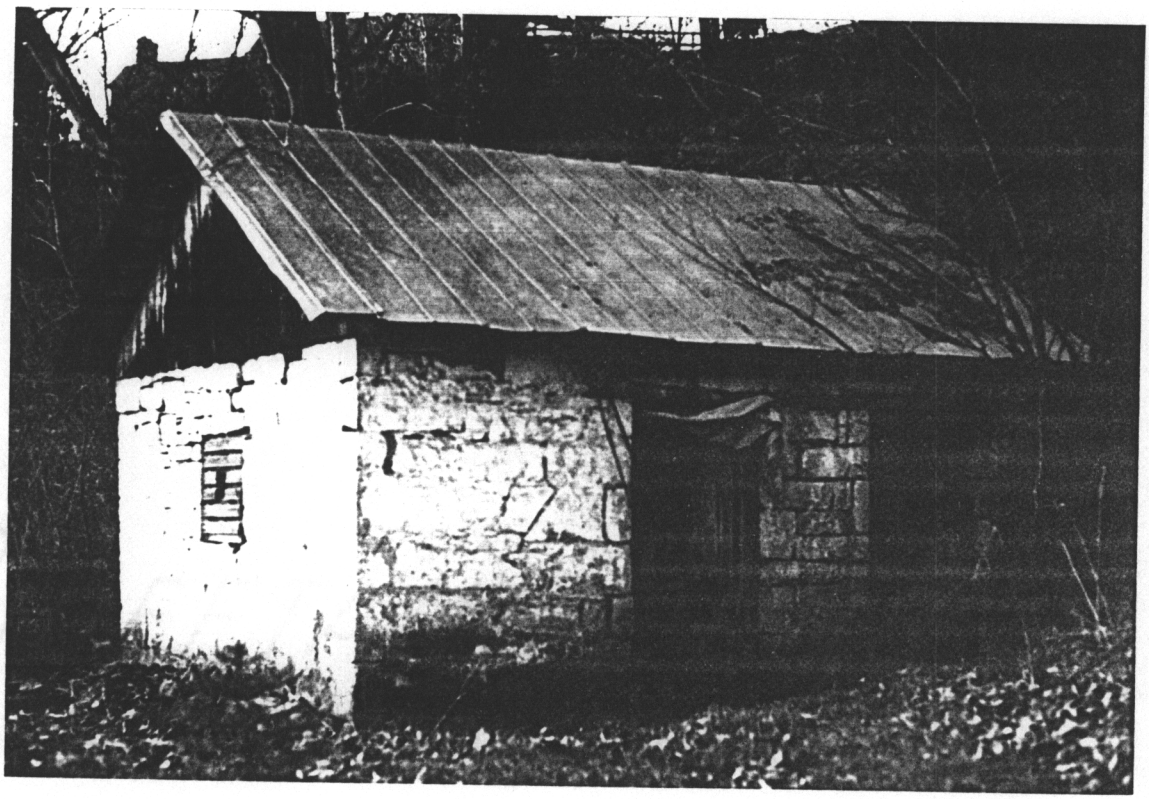
Merrimac Vicinity 1925-50

Located adjacent to the early nineteenth-century Linkous-Kipps house, this frame and poured concrete springhouse is in unusually good condition. It is the only square building (10x10') in the survey, and it has three, six-light fixed windows, an L-shaped trough that runs from back to front, and decorative pilaster-like corner pieces.



60-318
Luster's Gate Vicinity 1800-25

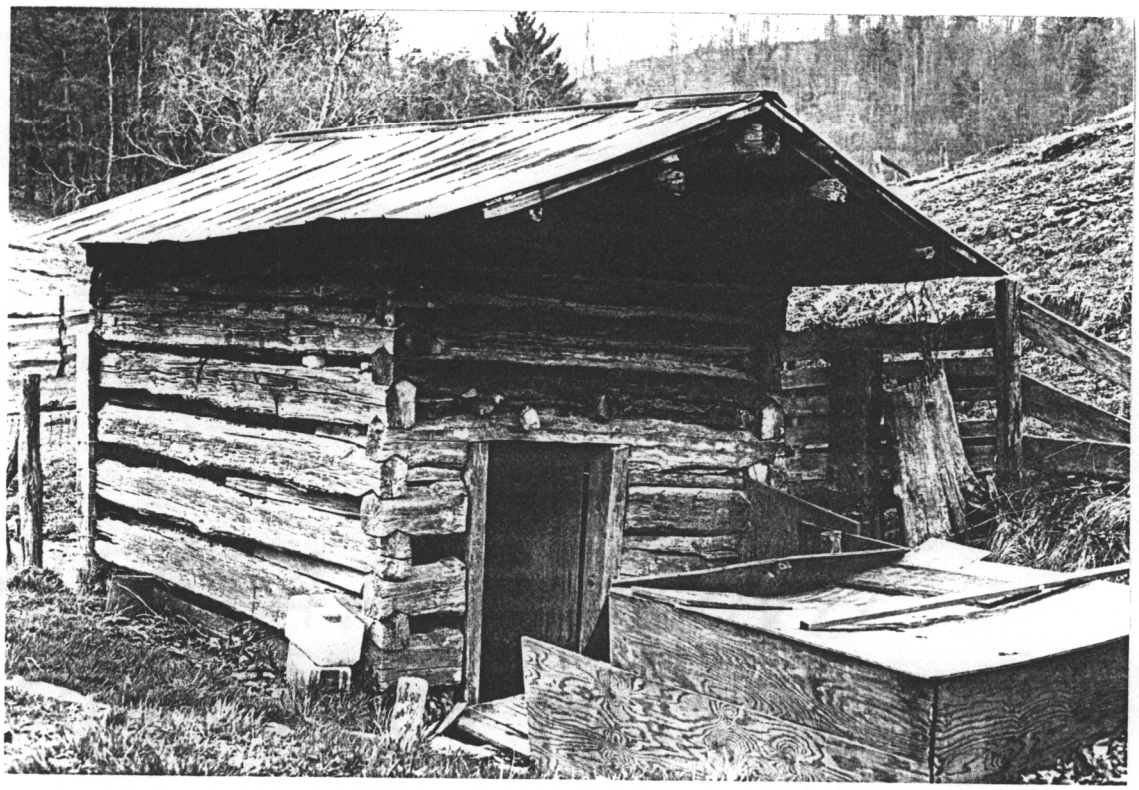
One of two coursed rubble springhouses in the county, this building measures 13x17', and has two side entrances. Interior stone shelf supports are original to the building.



60-346

McDonald's Mill Vicinity 1875-1900

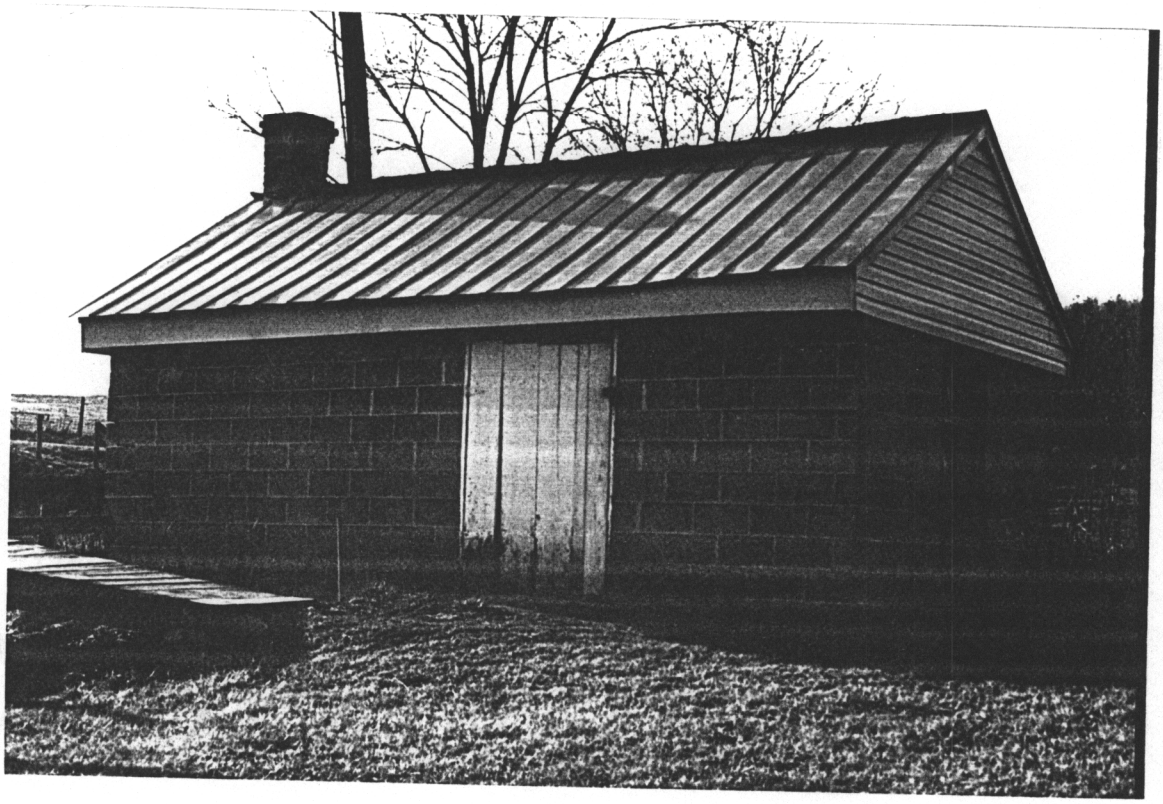
This 80-ft² log springhouse has v-notched corners and an earthen floor. The interior is in poor condition.



60-360

McDonald's Mill Vicinity 1925-50

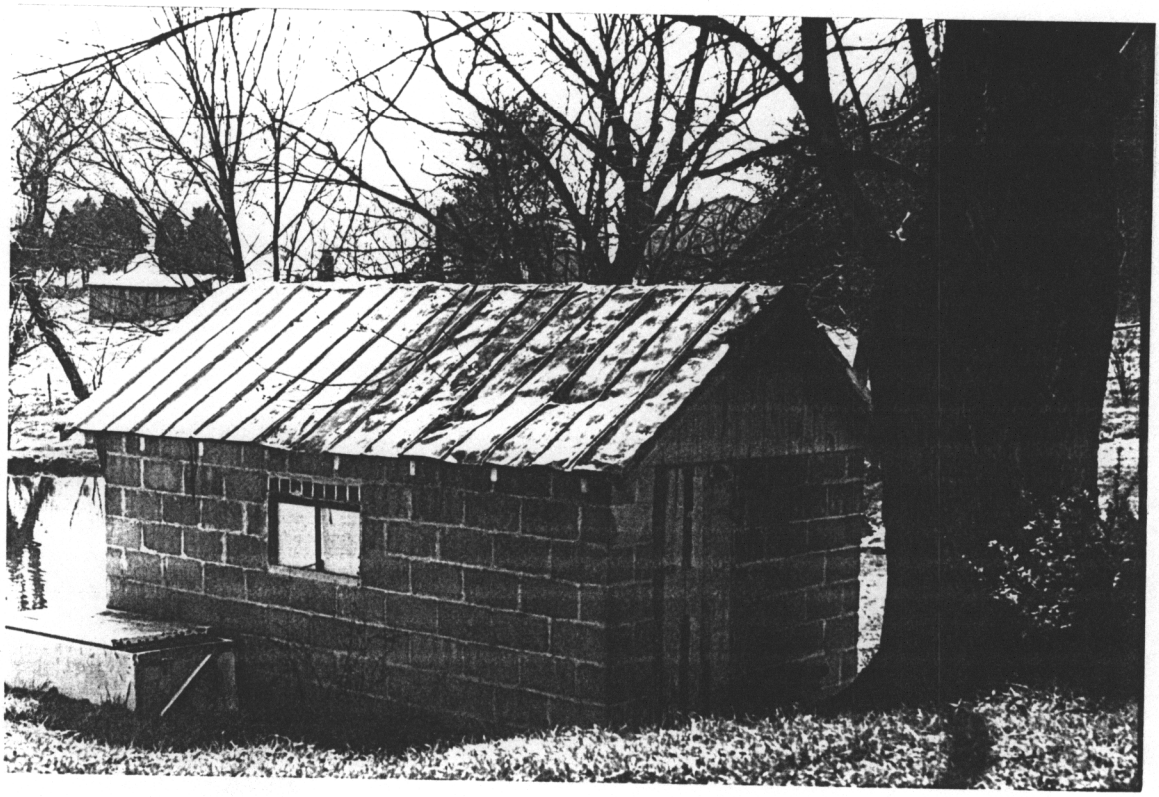
This much-altered concrete block springhouse is unusual for its large size (270 ft²) and flue. It is currently used for storage and rendering lard.



60-382
Ellett

1925-50

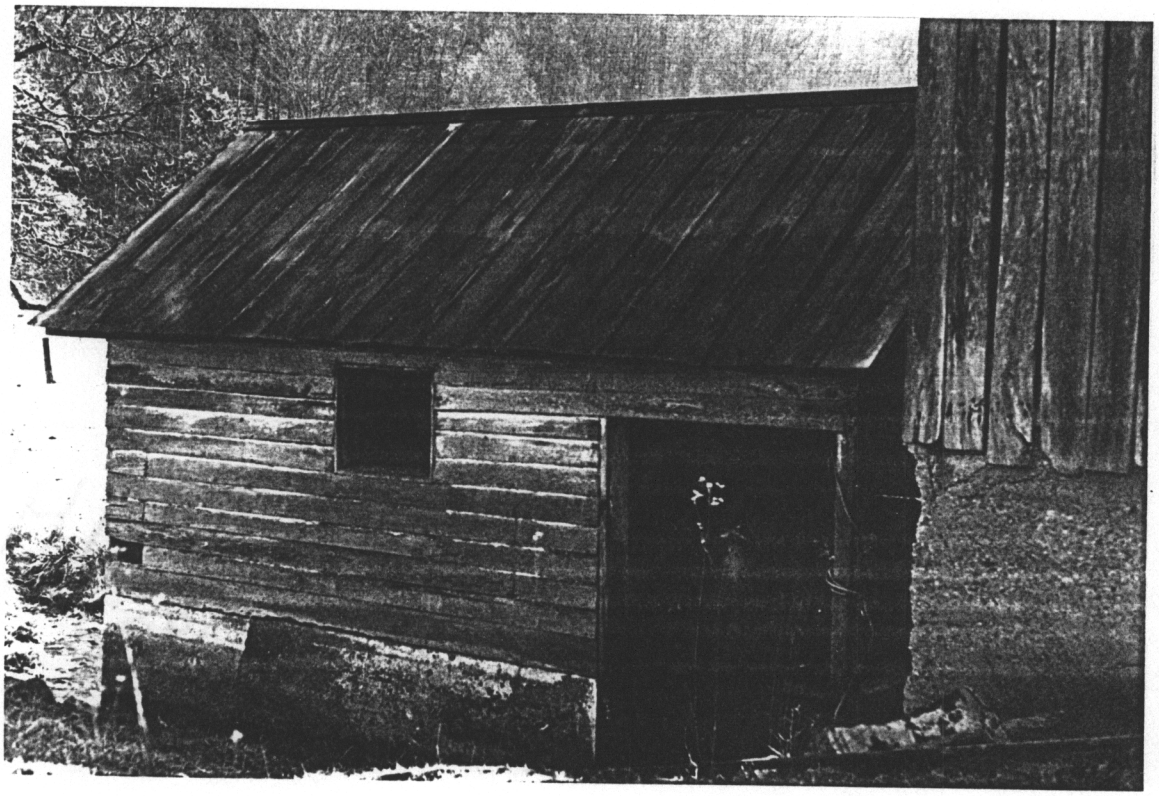
This typical concrete block springhouse faces into a gentle slope and has a trough that runs from front to back along the side wall. The building contains 116 square feet.



60-385
Ellett Vicinity

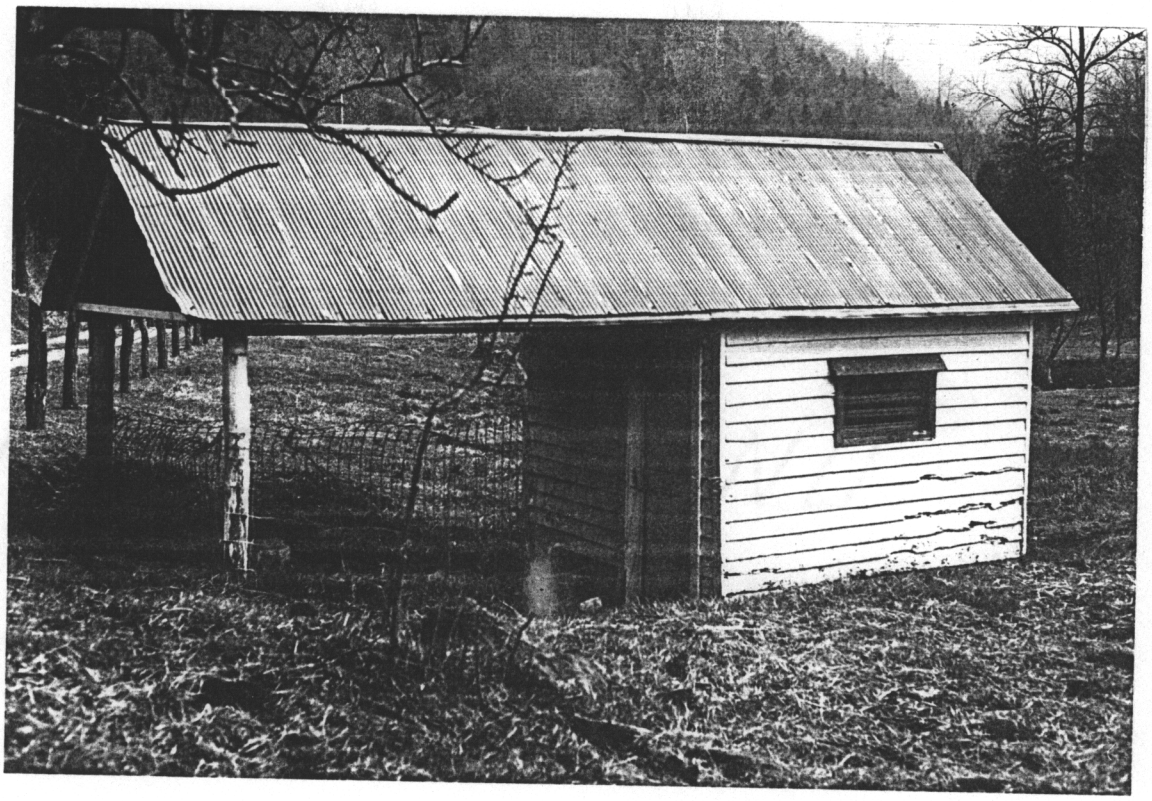
1900-25

Constructed adjacent to an 1800-25 house, this frame and poured concrete springhouse is unusual for its L-shaped trough. The building measures 10x12'.



60-392
Brush Harbor Vicinity 1925-50

The outstanding feature of this 8½x9', frame springhouse is its eleven-foot overhang supported by posts. It also has two windows with horizontal wooden bars.



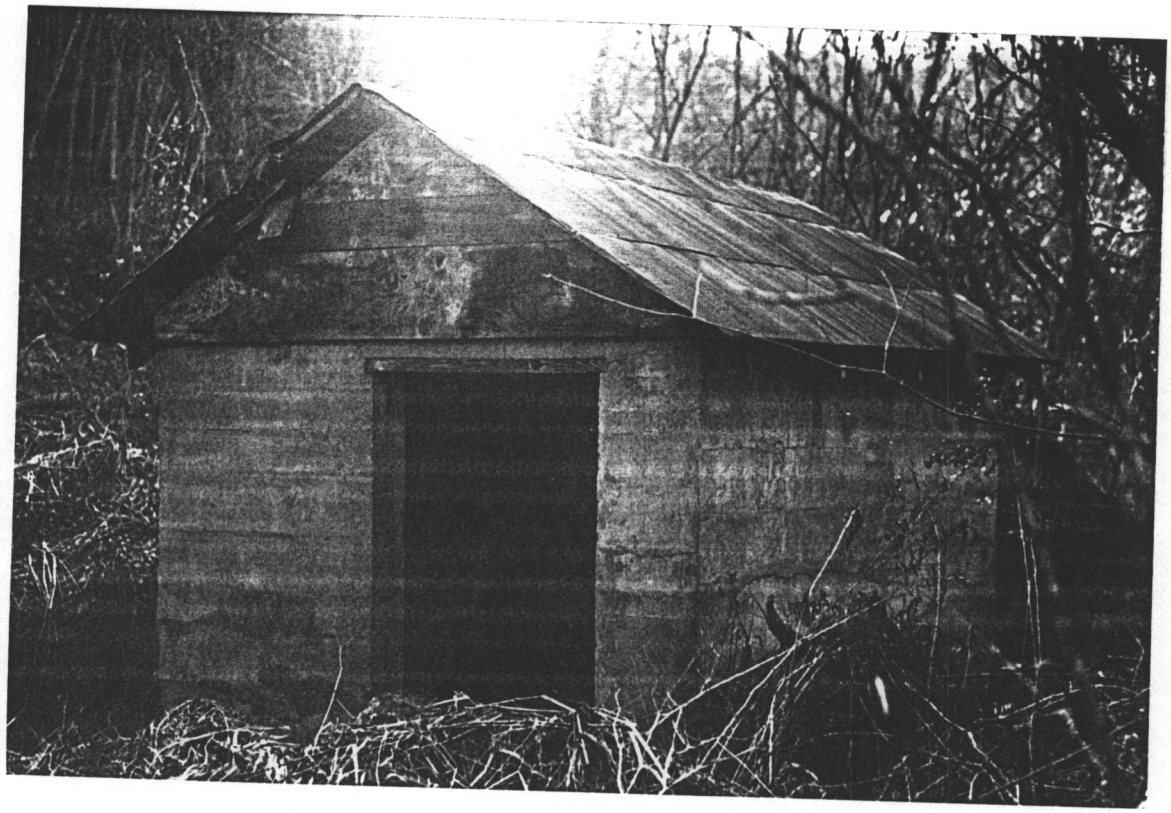
60-417
Lafayette Vicinity 1850-75

This large (14x28'), coursed rubble springhouse is in poor condition. A 14x12' addition considerably altered its original appearance.

60-446
Shawsville Vicinity

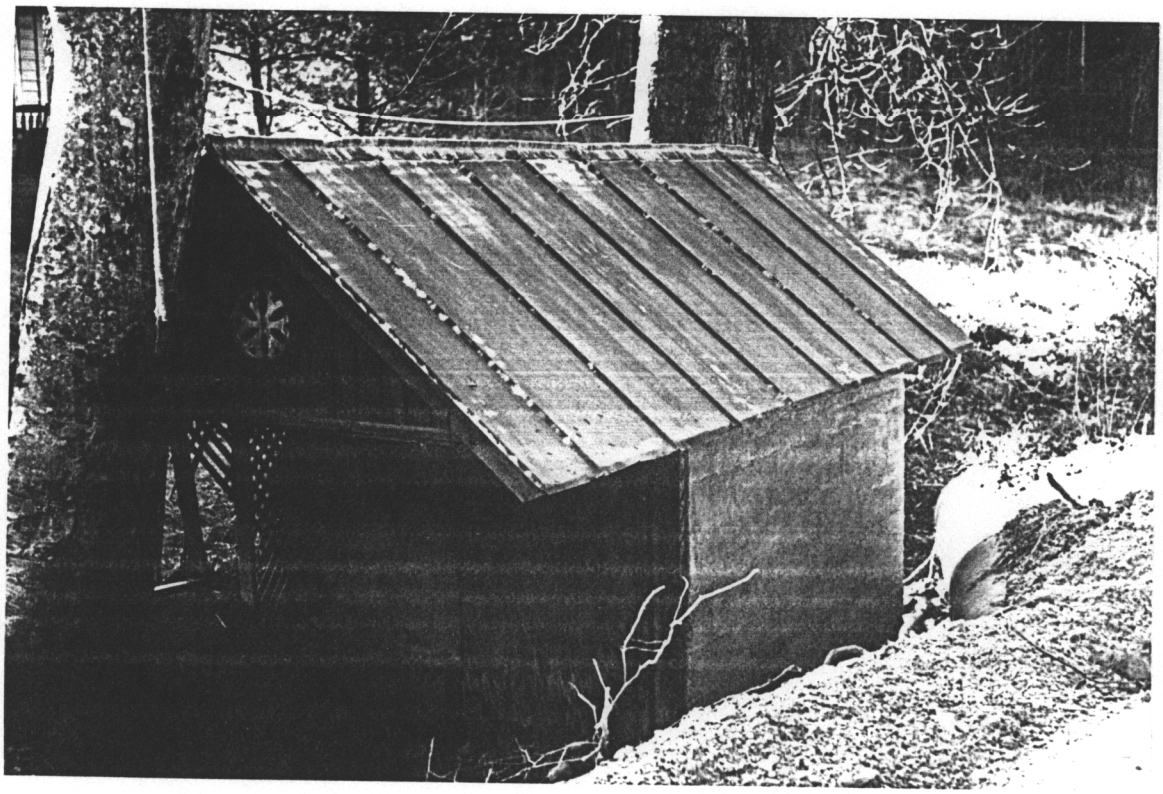
1925-50

One of five poured concrete springhouses in the county, this small (70 ft²) building has an L-shaped trough. It is in poor condition.



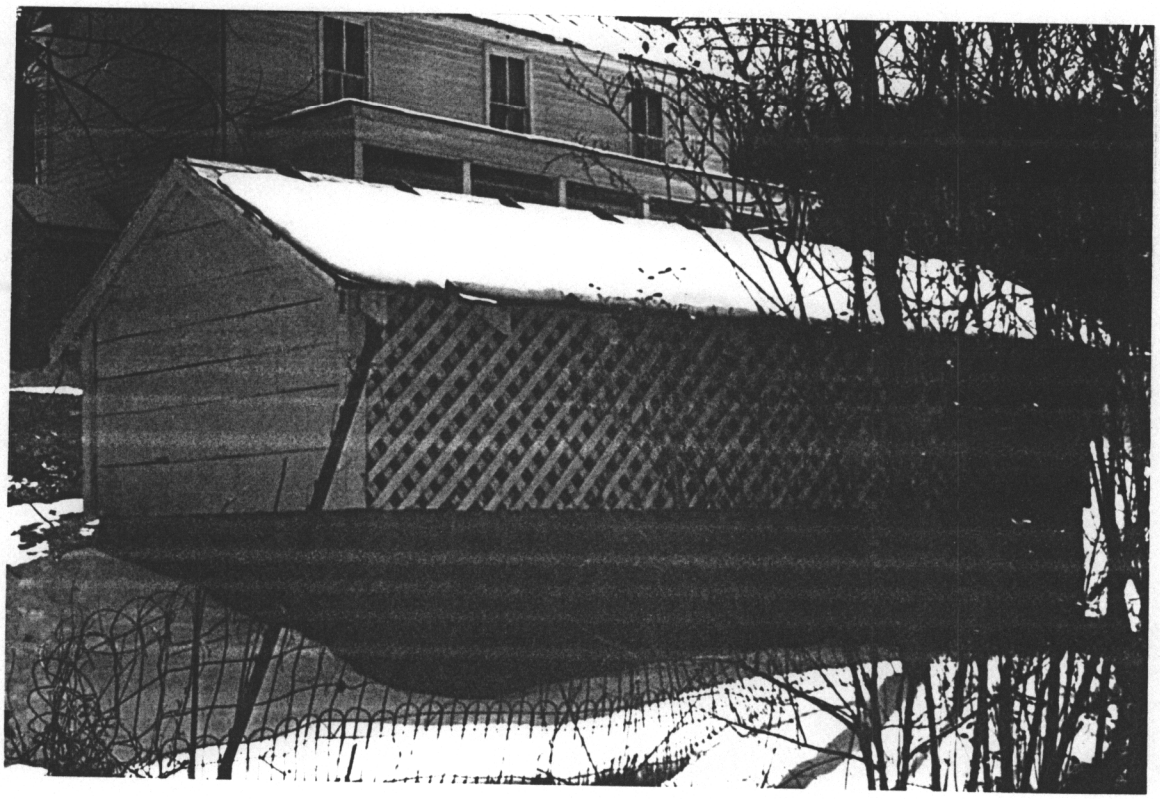
60-448
Shawsville Vicinity 1925-50

Like its neighbor (60-446), this poured concrete spring-house measures 7x10'. The decorative vents in both gables are unusual.



60-532
Spring Branch 1900-25

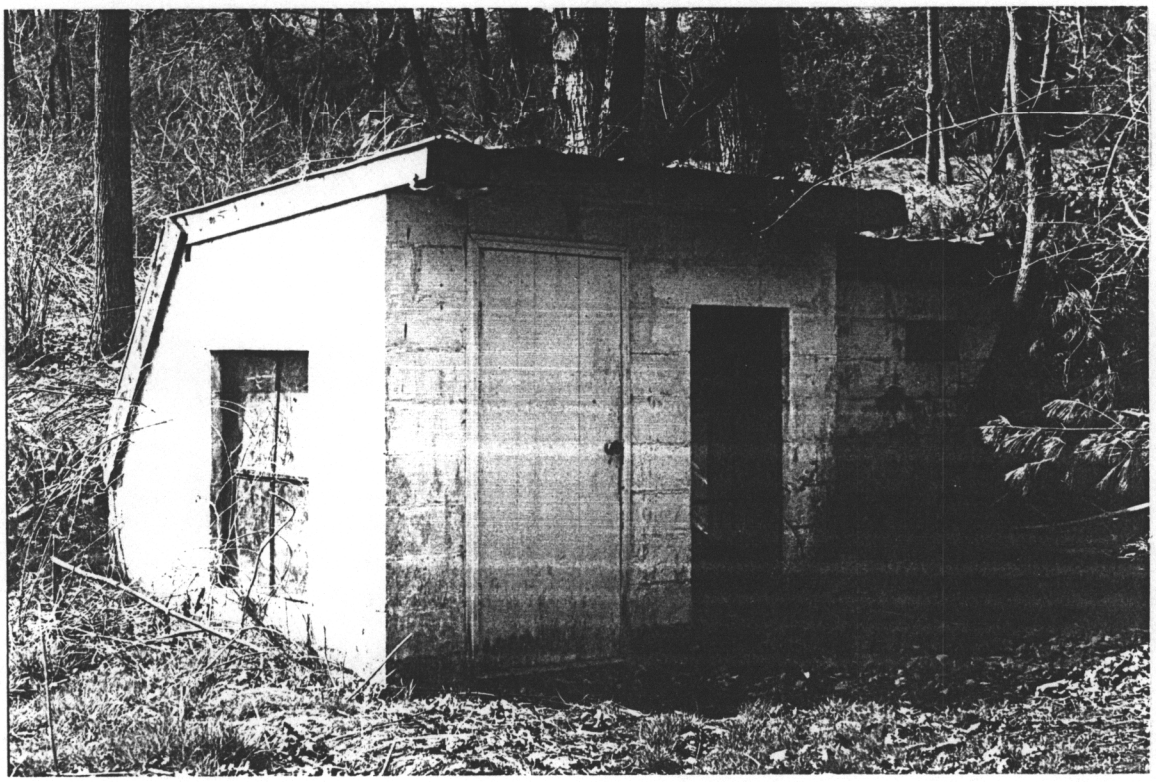
This side-gabled, frame and poured concrete springhouse is lighted and ventilated by a three-foot high lattice screen that makes up the entire west wall. The building measures 7x17'.



60-549
Belmont Vicinity

1925-50

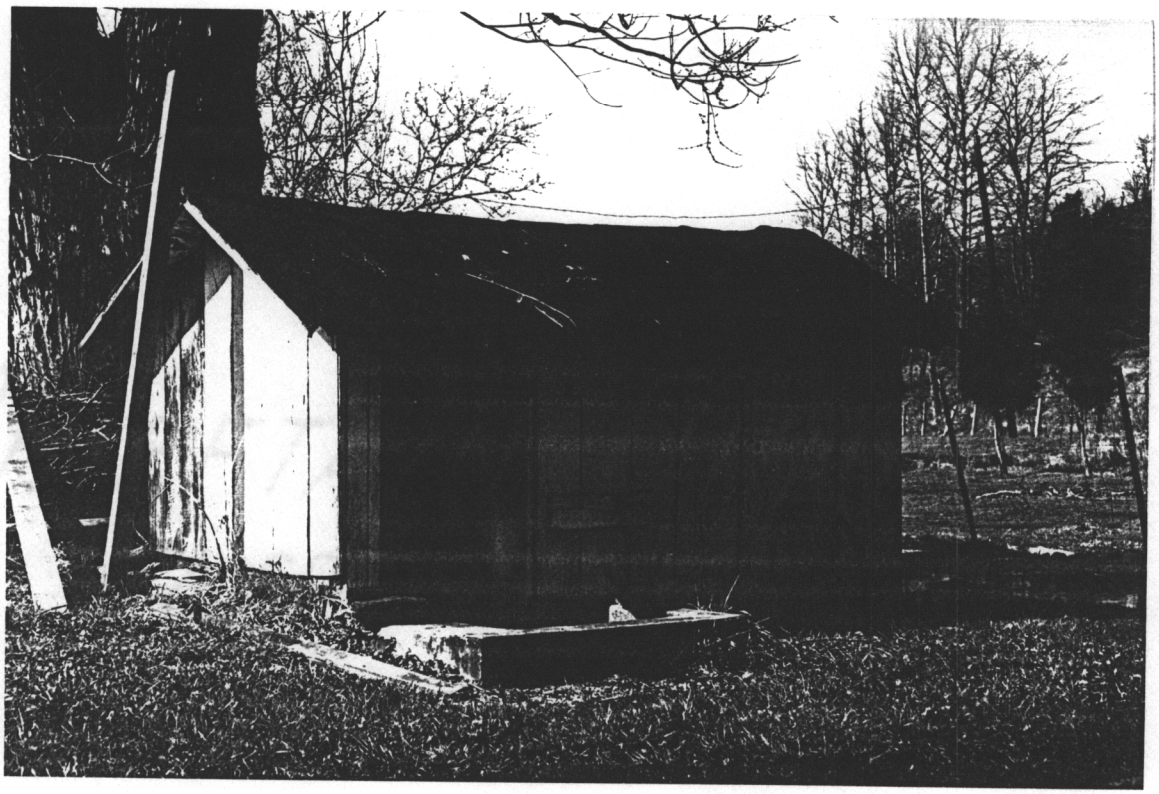
This small (66 ft²), concrete block springhouse has an unususual glass wall that lights the room adjacent to the food storage room. The structure is dilapidated.



60-572
Childress

1925-50

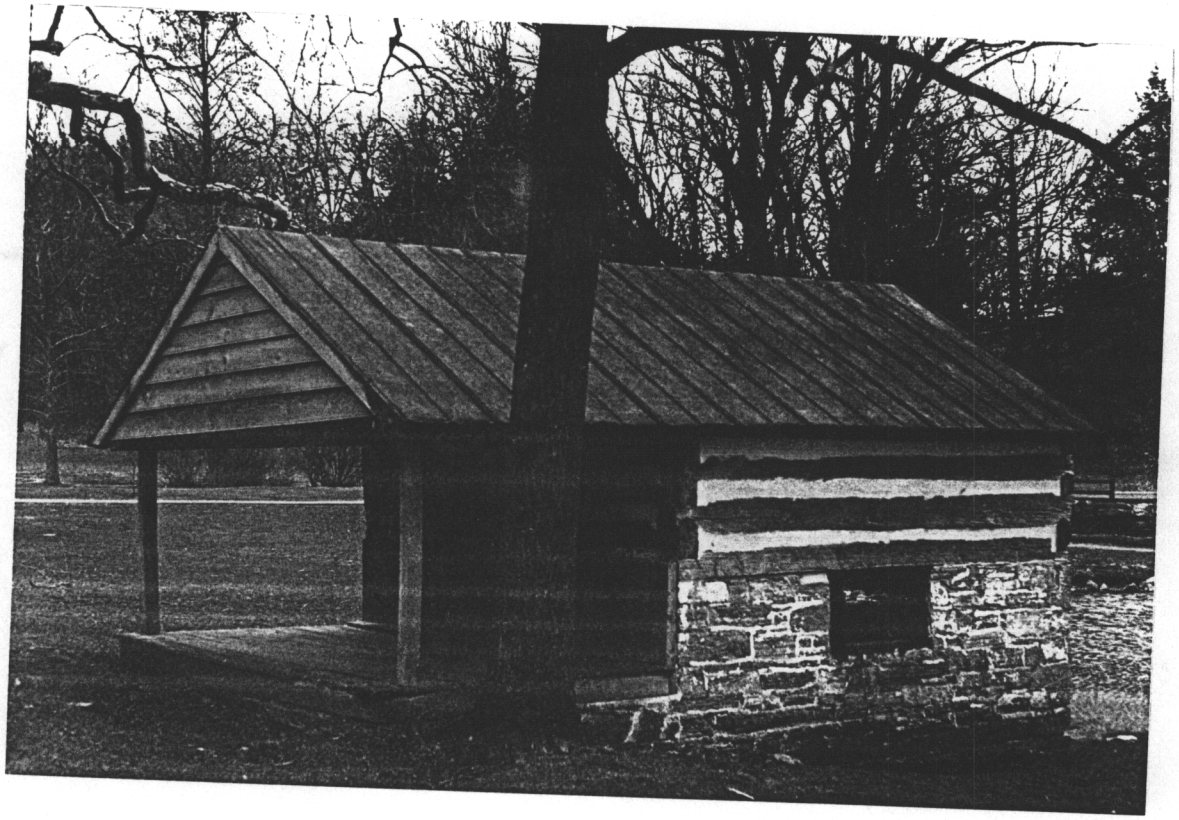
This 6½x11', frame, side-gabled springhouse is in fair condition.



150-100-11
Blacksburg

1850-75

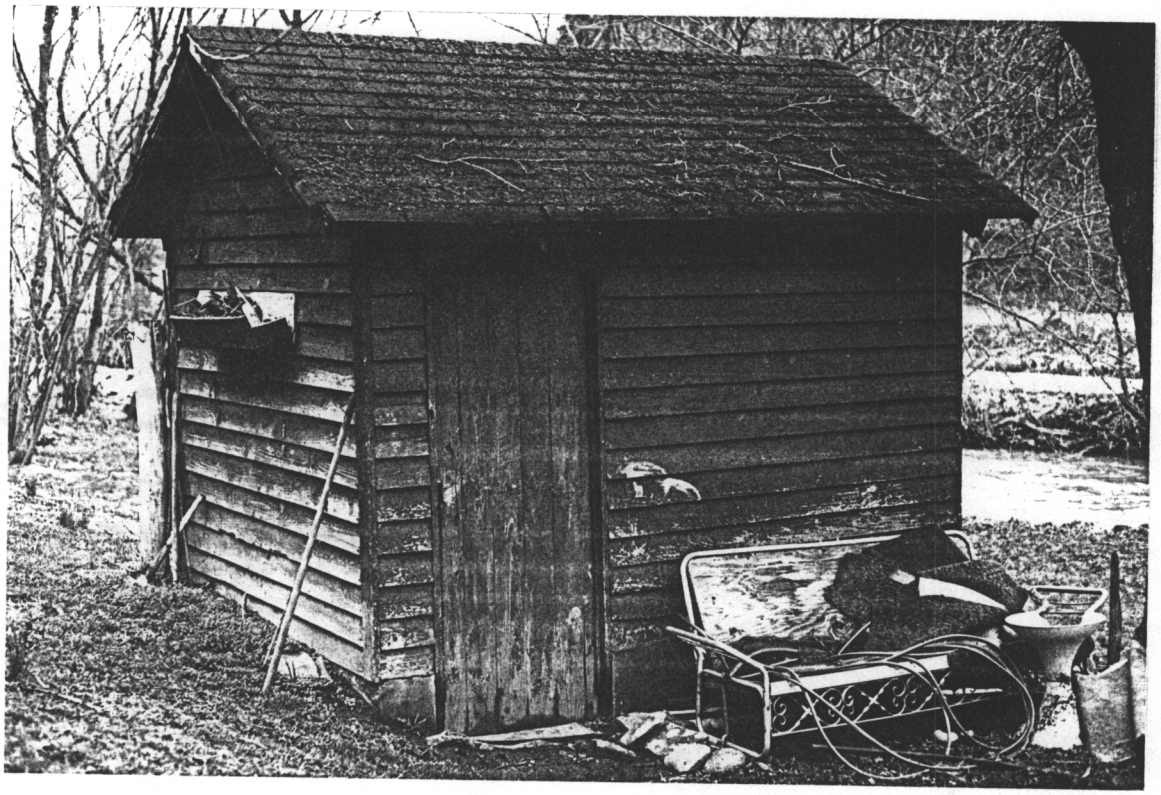
This two-story log and coursed rubble springhouse is one of two buildings surveyed within Blacksburg town limits. It measures 12x13' and has a seven-foot overhang, and three windows with vertical wooden bars. The structure, adjacent to the 1801 farm Solitude, has been recently altered.



1

Shawsville Vicinity 1925-50

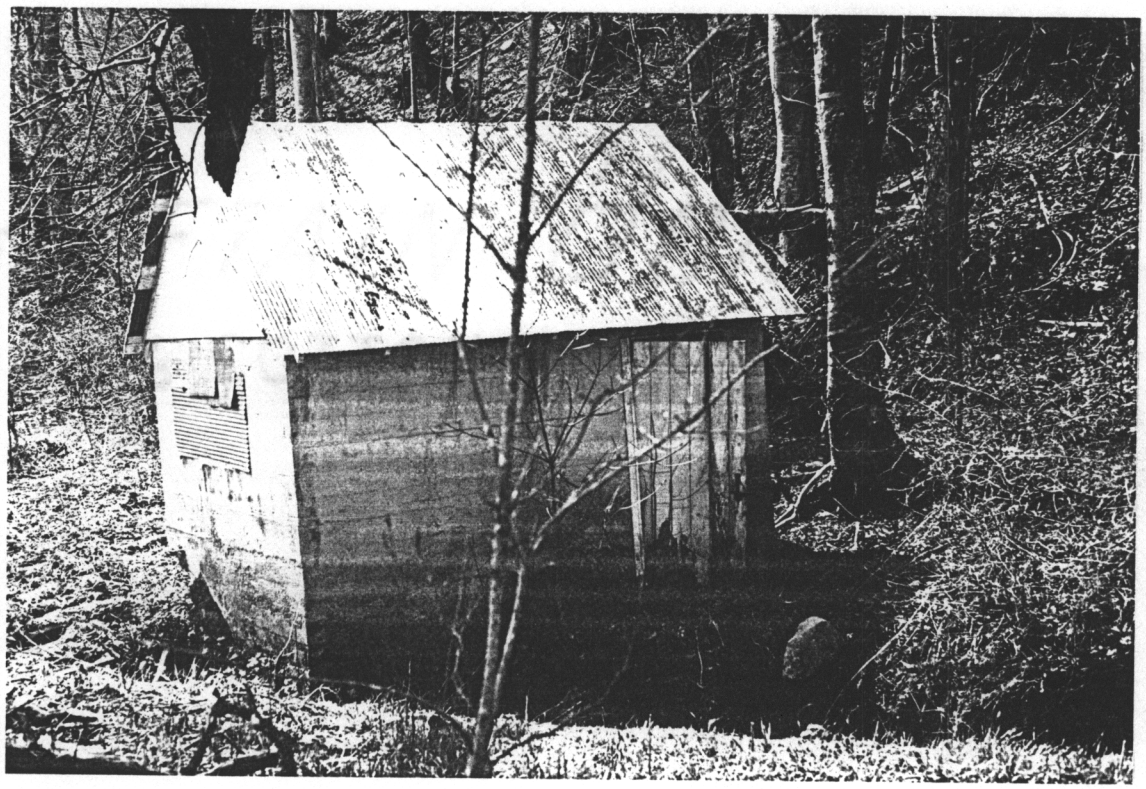
This plain, small (8x10'), frame springhouse is side-gabled and has a trough that runs along the back wall. Its finished walls and four interior stairs are atypical.



2

Shawsville Vicinity 1925-50

Constructed of poured concrete, this side-gabled spring-house measures 10x13' and is in poor condition.

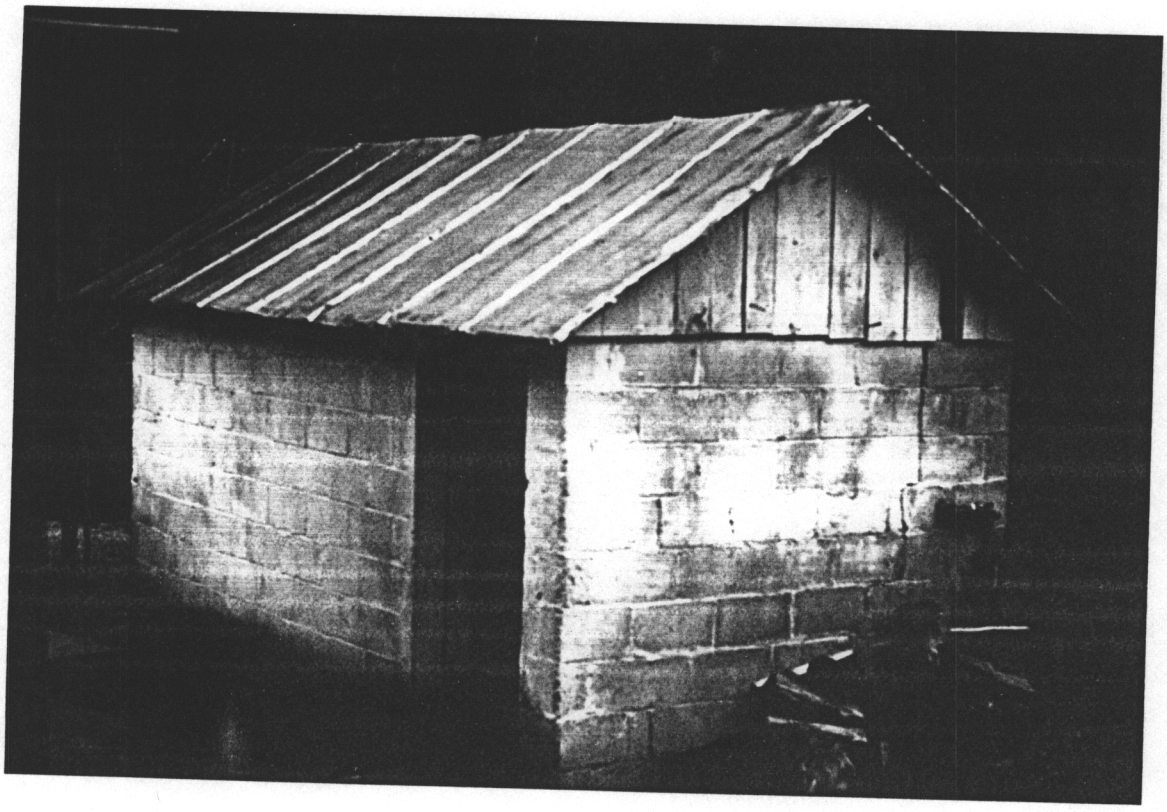


3

Shawsville Vicinity

1925-50

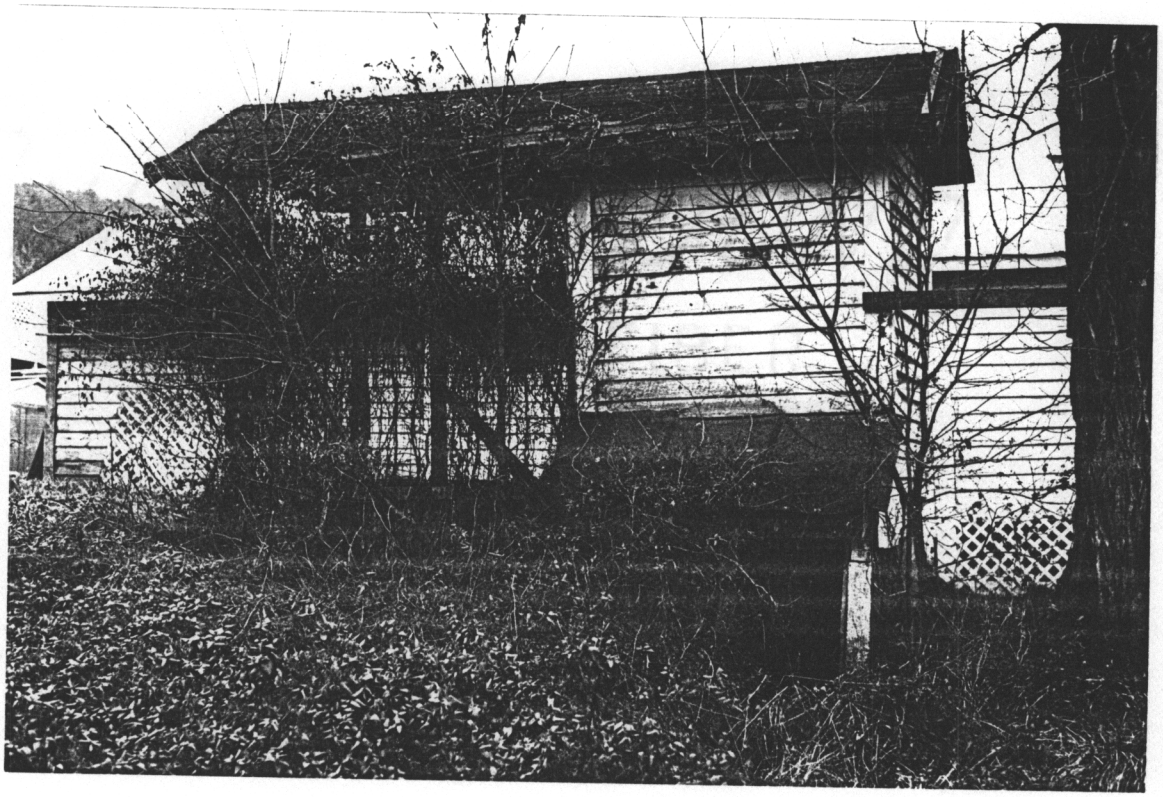
This is an unusual side-gabled, concrete block springhouse with a trough that runs through two rooms along the back wall. The building measures 8x14'.



4

Shawsville 1900-25

This frame and poured concrete springhouse has a two-story plan and remarkably small dimensions (6x6½' per floor). It also has a seven-foot overhang.

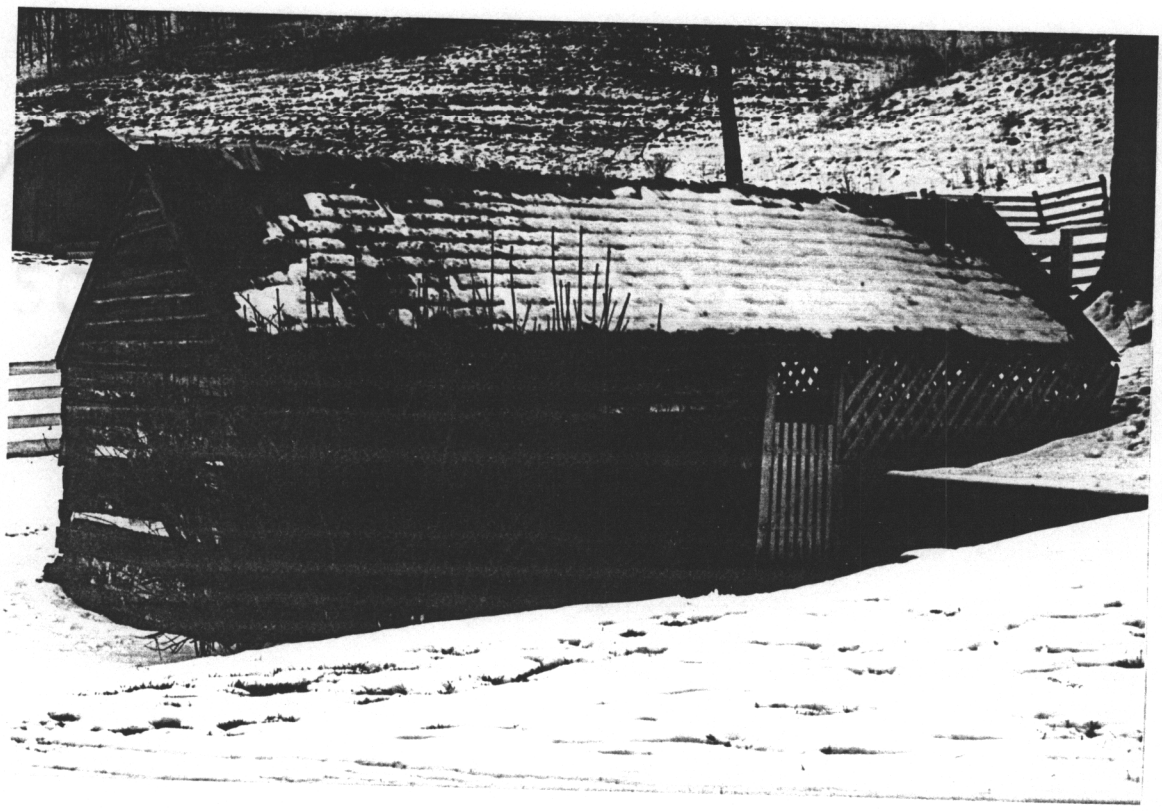


5

Shawsville

1850-75

This log and coursed rubble springhouse is an early example of a front-gabled building that faces into a slope. An unusually long overhang (16') is enclosed on three sides with lattice, and the large (192 ft²) food storage room has a poured concrete trough that runs along the side wall. The three windows have vertical wooden bars.



6

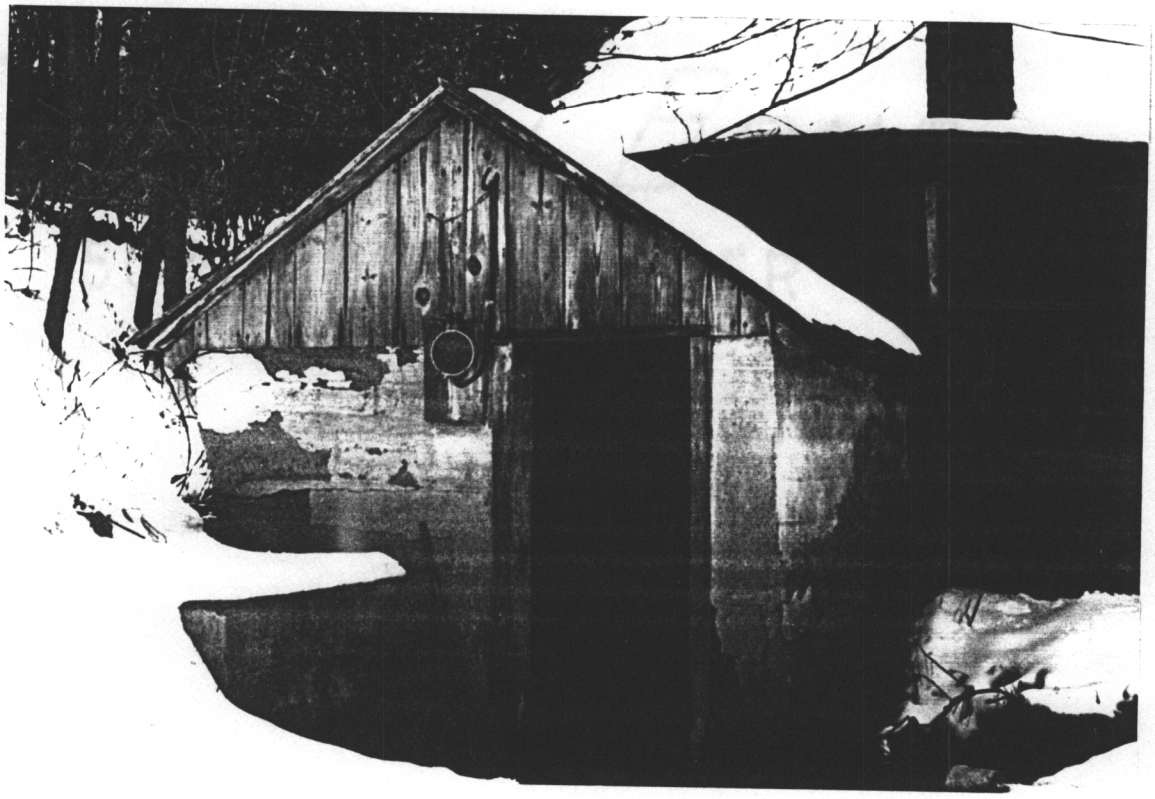
Shawsville Vicinity 1950-93

This frame and poured concrete springhouse is atypical for its late construction date and its large (20x26') size. It was intended only to protect a spring source, and is not equipped to store or cool perishables.

7

Shawsville Vicinity 1925-50

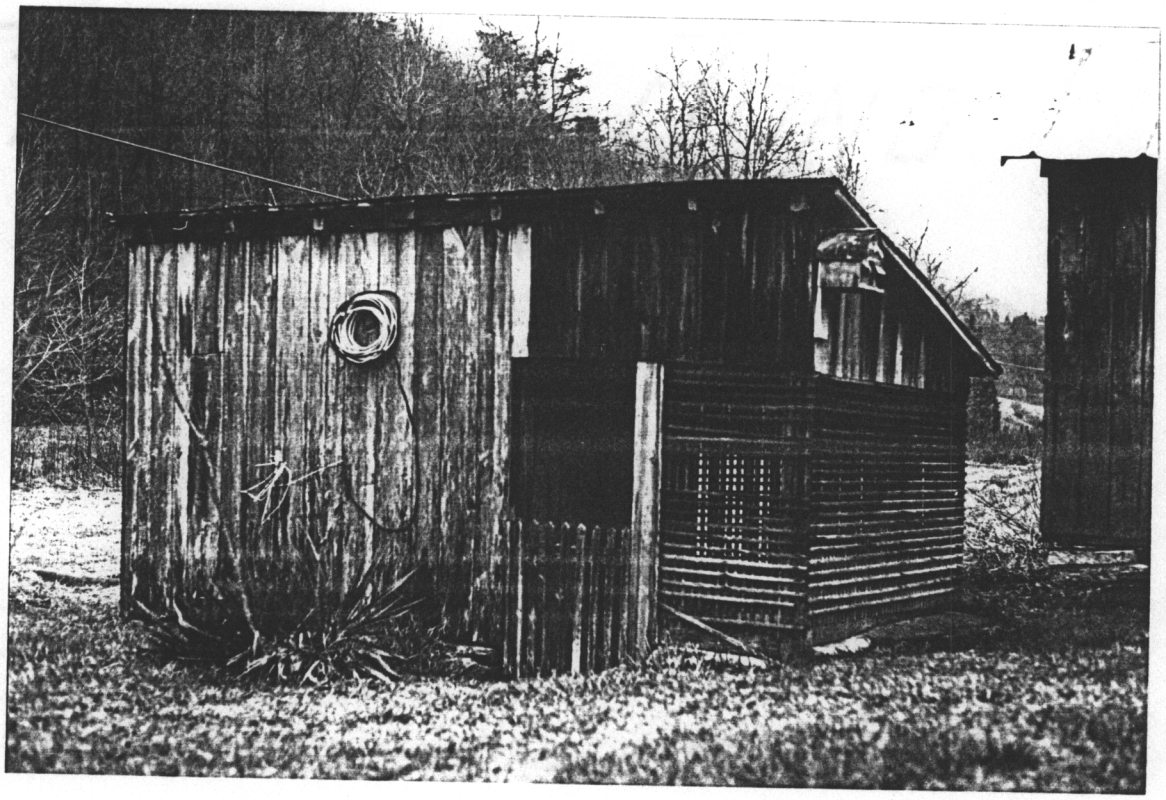
Constructed of poured concrete, this 8x10', front-gabled springhouse has two independent troughs perpendicular to each other. The eave of an adjacent building actually covers several feet of the springhouse.



8

Shawsville Vicinity 1900-25

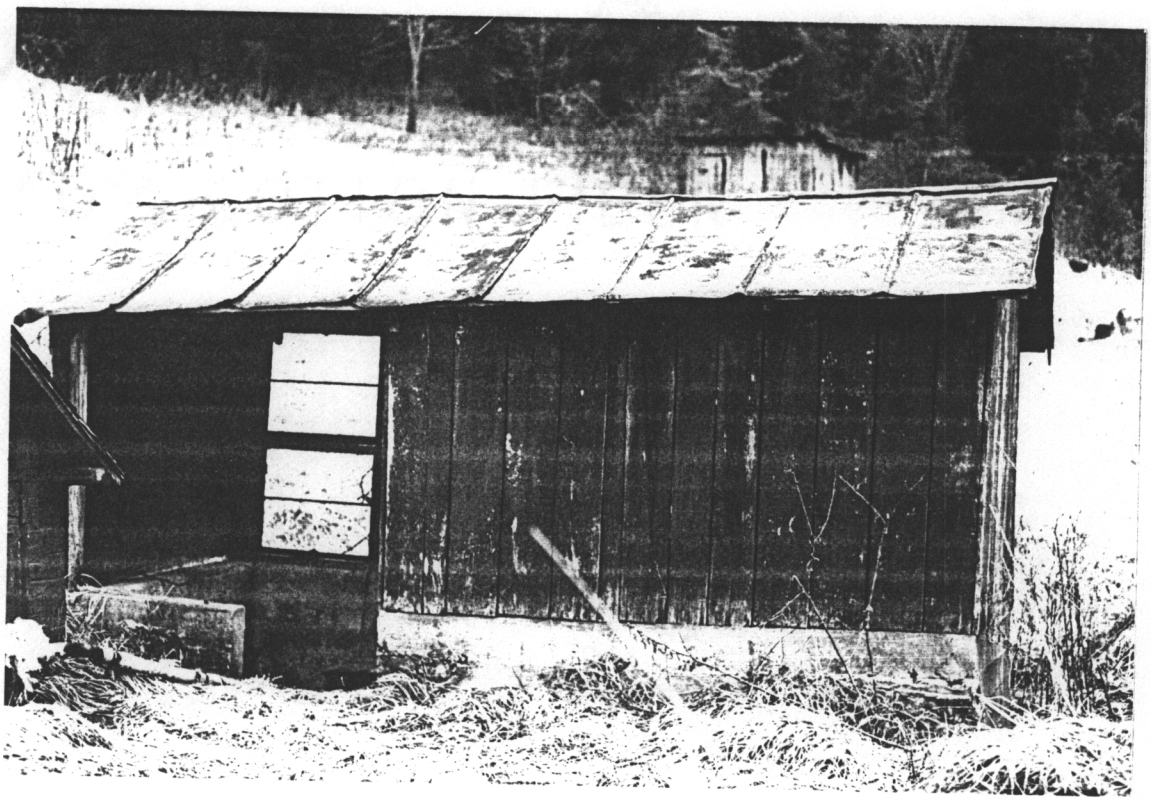
Distinguished by a five-and-a-half foot, lattice-enclosed shed overhang, this 7x9' springhouse is made of vertical frame with a coursed rubble foundation.



9

Shawsville Vicinity 1900-25

Like its neighbor (8), this side-gabled, frame and poured concrete springhouse contains sixty-three square feet, and has a five-and-a-half foot overhang.

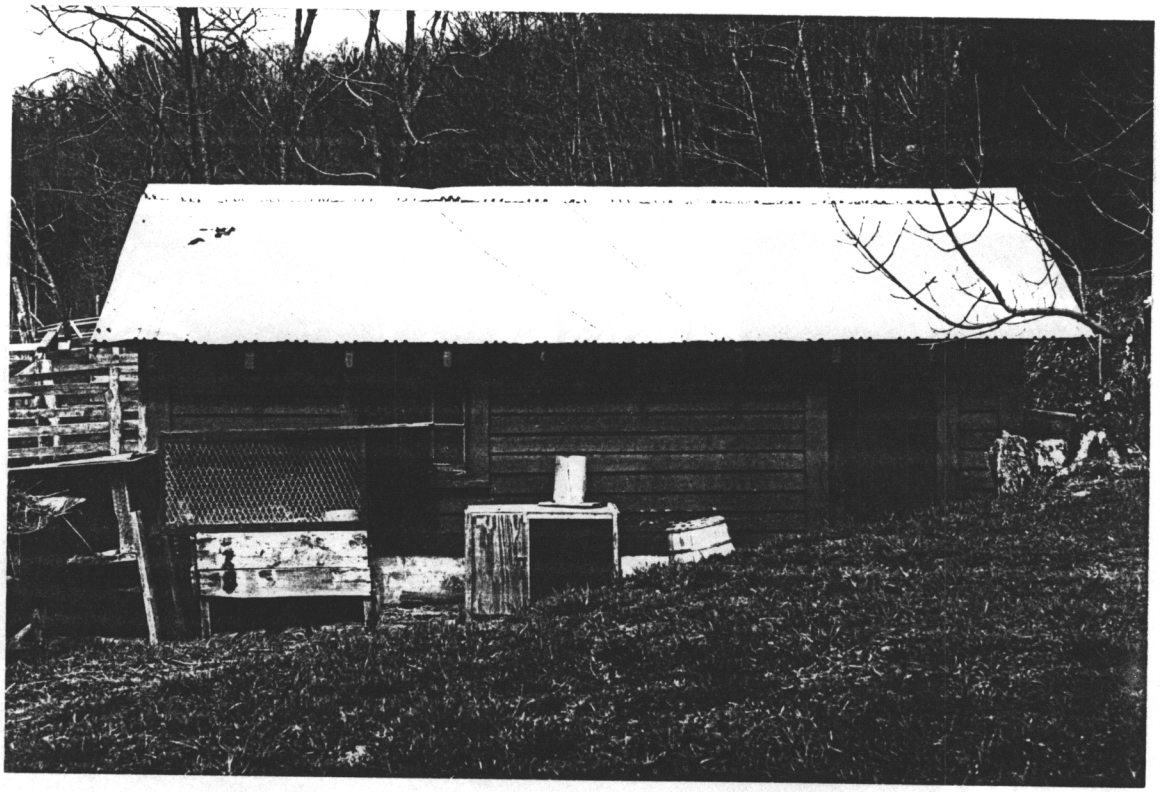


10
Shawsville Vicinity 1900-25

This frame springhouse has an unusually steep-pitched roof made of wooden shingles, and a six-foot overhang supported by posts. The building measures 9x12'.

11
Pilot Vicinity 1925-50

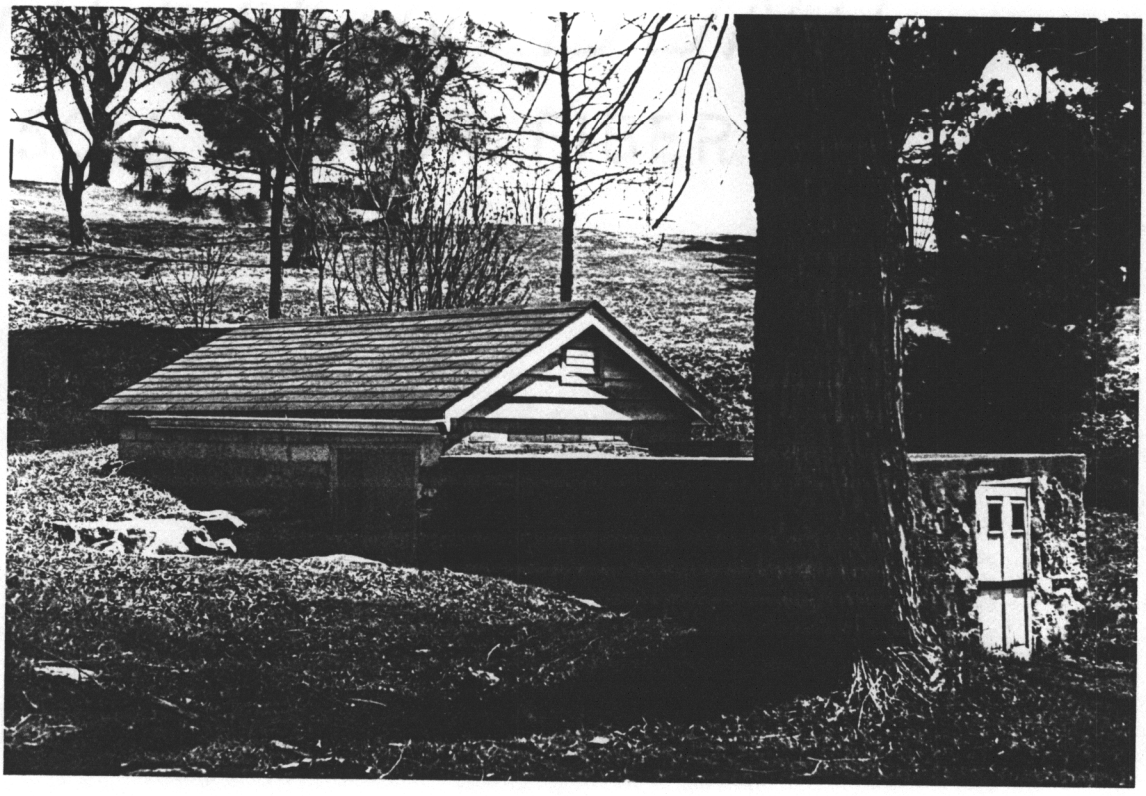
This medium-sized (180 ft²), frame, side-gabled springhouse has a trough that runs across the back wall.



12

Christiansburg Vicinity 1875-1900

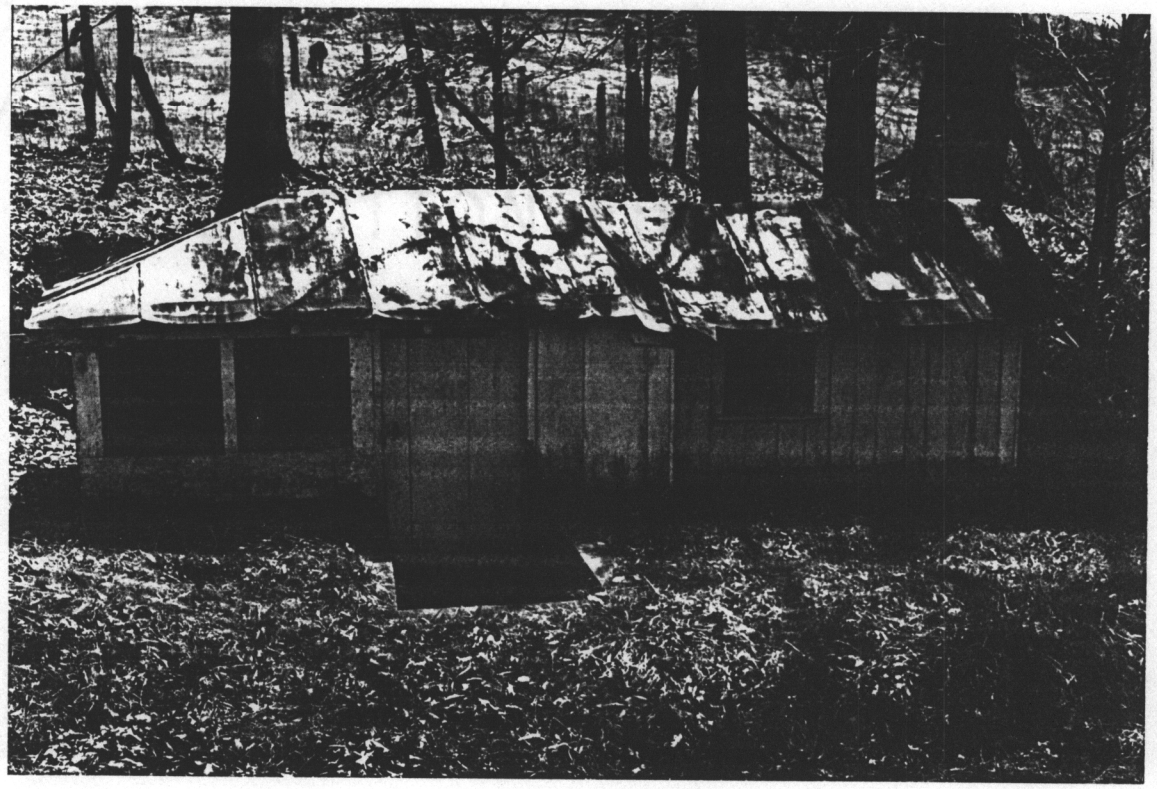
This much-altered, coursed rubble and poured concrete springhouse measures 10x22'. Its seven exterior stairs are unusual.



13

Fairview Vicinity 1950-93

This quirky frame and poured concrete springhouse has a hip and gable roof, and a multi-sided trough that runs through two rooms along the back wall. The building contains 114 square feet.



14

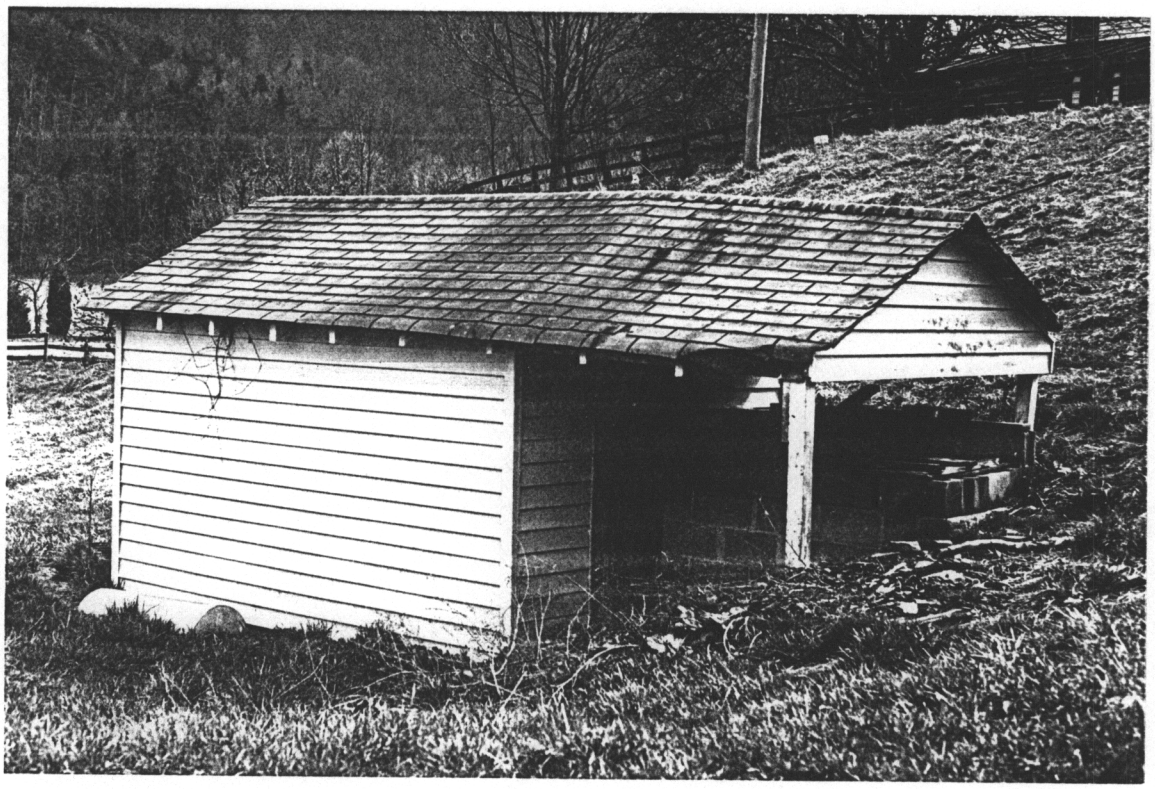
Christiansburg Vicinity 1925-50

This frame, front-gabled springhouse is notable for its small size (48 ft²).

15

Bennett's Mill Vicinity 1900-25

This medium-sized (10x11'), frame springhouse has been altered. Note the vinyl siding and the pump that blocks access to the door.



16
Lafayette Vicinity 1900-25

This typical frame, front-gabled springhouse has a ten-and-a-half foot overhang supported by posts, and a trough that runs from front to back along the side wall. The building measures 10x12'.

REFERENCES

Allen, Lewis F. Rural Architecture: Being a Complete Description of Farm Houses, Cottages, and Outbuildings. 1852.

Bevins, Ann. Historical Development of Agricultural Buildings. Kentucky Heritage Council, 1984-85.

Burns, John A. (Ed.). Recording Historic Structures. Washington, D.C.: American Institute of Architects Press, 1989.

Cowan, Ruth. More Work for Mother. New York: Basic Books, Inc., Publishers, 1983.

Dietrich, Richard. Geology and Virginia. Charlottesville: the University Press of Virginia, 1970.

Farm Buildings: A Compilation of Plans for General Farm Barns, Cattle Barns, Horse Barns, Sheep Folds, Swine Pens, Poultry Houses, Silos, Feeding Racks, Etc. 1904.

Gianni, B., Kemner, K., & Shiles, B. Dice Thrown. New York: Princeton Architectural Press, 1989.

Halstead, Byron. Barns, Sheds, and Outbuildings. Vermont: the Stephen Green Press, 1977 (re-print of 1881 ed.).

Harney, George. Barns, Outbuildings, and Fences. 1870.

Kegley, Nan F. Toward the Preservation of Rural, Cultural, Historic Landscapes: A Method for Evaluating Nineteenth Century Blue Ridge Farms. Masters Thesis, Virginia Polytechnic Institute and State University, 1986.

Leavy, Herbert. Successful Small Farms: Building Plans and and Methods. Michigan: Structures Publishing Co., 1978.

Long, Amos, Jr. The Pennsylvania German Family Farm. Pennsylvania: the Pennsylvania German Society, 1972.

McMurry, Sally. Families and Farmhouses in Nineteenth-Century America: Vernacular Design and Social Change. New York: Oxford University Press, 1988.

Meinig, D.W. (Ed.). The Interpretation of Ordinary Landscapes. New York: Oxford University Press, 1979.

Morgan, John. The Log House in East Tennessee. Knoxville: the University of Tennessee Press, 1990.

National Trust for Historic Preservation. America's Forgotten Architecture. New York: Pantheon Books, 1976.

Neubauer, L., and Walker, H. Farm Building Design. New Jersey: Prentice-Hall, Inc., 1961.

Noble, Allen G. (Ed.). To Build in a New Land: Ethnic Landscapes in North America. Baltimore: the Johns Hopkins University Press, 1992.

Springs of Virginia: A Guide to Spring Management and Protection. Blacksburg: Virginia Water Resources Research Center, 1992.

Tishler, William. "The Site Arrangement of Rural Farmsteads." Association for Preservation Technology Bulletin. 1978, 10, No.1, 63-78.

Worsham, Gibson. Historic Sites Survey of Montgomery County, Virginia Report. Virginia Department of Historic Resources, 1986.

APPENDIX A. SAMPLE SPRINGHOUSE EVALUATION FORM

Springhouse Evaluation Form

Location _____

V.H.L. File Number: _____

Date of Survey: _____

Age of Main House: _____

Condition: _____

Age of Springhouse: _____

Condition: _____

Current Use: _____

Number of Stories: _____

Foundation: _____

Structural System: _____

Exterior Wall Covering: _____

Roof: Shape- _____

Materials- _____

Other- _____

Openings: Doors- _____

Windows- _____

Floor Plan and Dimensions:

Stairs: _____

Flooring: _____

Interior Finish: _____

Water System Description: _____

_____

_____

_____

Site: Orientation- _____

Slope- _____

Landscape Features: _____

Alterations/Additions: _____

Site Plan:

APPENDIX B. GEOLOGY OF VIRGINIA SPRINGS

Springs range in size from small seepages to large openings in the ground. Spring-fed streams are the result of rapidly flowing water that runs out of the spring discharge area and erodes a stream channel from the spring source. Springs are continuously replenished by rain and other precipitation that enters the soil and gradually fills up the spring's aquifer, a storage compartment of sorts made of semi-permeable rock and sand that stores and releases groundwater. Most springs begin as mere seepages of water that surface through fractures in surrounding layers of rock.

Two types of springs exist in Virginia: gravity and artesian. Gravity springs occur when water moving underground is forced to the ground surface. Gravity springs are especially sensitive to seasonal variations in precipitation and may stop flowing during dry weather. Artesian springs flow from a single aquifer. The water is under pressure and gradually rises through fissures in surrounding layers of rock to form a spring.

Virginia is divided into five geographical areas, according to geology, topography, soil, climate, and aquatic resources

(Springs of Virginia, 1992). Springs occur in all five areas, but the greatest number and largest springs are in the Valley and Ridge province, in the counties of Augusta, Bath, Highland, Rockbridge, Rockingham, and Shenandoah (see Figure 1). Limestone and other materials abundant in this province have eroded, and many underground caves, channels, fissures, and sinkholes exist. They encourage "rapid groundwater recharge, movement, and storage" (Springs, 1992, p.4), and hence springs develop. The "small, shallow aquifers, thin soils, steep terrain, and non-porous bedrock " (Springs, 1992, p.4) typical of the Cumberland Plateau and Blue Ridge Mountains inhibit spring formation. Similarly, springs are scarce in the Piedmont and Coastal Plain provinces due to the flat terrain and sandy, porous soil (Springs, 1992).

Natural springs are classified by geologists according to their average flow, on a scale that runs from one (more than 44,900 gallons per minute), to eight (less than one liter per minute). Flow is the "volume of water moving from the spring per unit of time" (Springs, 1992, p.6). According to the Virginia Springs Survey, there are no first magnitude springs in the state, but at least ten springs of second magnitude. Most Virginia springs are classified as small (less than one-hundred gallons per minute). In fact,

about seventy-five percent of the springs in the Virginia Springs Survey have flows less than five-hundred gallons per minute (Springs, 1992). The largest spring surveyed in Virginia was in 1928 in Pulaski County, located east of Newbern near the New River. It had a flow of 10,300 gallons per minute, and it was submerged by the construction of the Claytor Lake Reservoir (Springs, 1992).

Springs are also classified according to temperature. Cold-water springs average between 52-58°, about the same as the mean annual air temperature in Virginia of 57°. Thermal springs are either warm, from 60-98°, or hot, with mean water temperatures above 98°. The Virginia Springs Survey has located over 1,500 cold-water and one-hundred thermal springs (Springs, 1992). Most springs have uniform water temperatures that vary a few degrees during the year. The temperatures of "small, shallow springs tend to fluctuate more on a daily and seasonal basis because their temperatures are regulated more by air temperature than the temperature of the earth" (Springs, 1992, p.7). Deep springs, however, have more stable temperatures because they are regulated by the earth's internal heat (Springs, 1992).

APPENDIX C. PUBLIC WORKS BACKGROUND

Springs served as a primary water source for most rural residents well into the twentieth century. Urban dwellers had access to tap water by the late 1800s (a few had indoor plumbing as early as the 1860s), but most rural families did not achieve access to the full water system until the 1930s. For many farm residents, indoor plumbing was unavailable until after World War II (Cowan, 1983).

Rural communities "lacked municipal corporations that could finance and organize water-supply and sewerage projects" (Cowan, 1983, p.86), and it was not until the Rural Electrification Act of 1936 that farms had access to central station electric service (Cowan, 1983). The introduction of electricity meant that pumps could be used to bring water into the house via pipes, in place of hand-carried water from a spring, well, cistern, or stream.

APPENDIX D. SPRING MAINTENANCE

The Virginia Water Resources Research Center recommends these steps to keep springs healthy and free of contamination:

1. Limit land disturbance around springs and spring-fed streams.
2. Plan ahead when clearing land, plowing, burning, building, constructing roads, dumping, filling, mining, or dredging.
3. Avoid spreading manure or applying fertilizers near springs, streams, or steep slopes, especially when the ground is frozen or during rainy weather.
4. Site animal-waste storage away from waterways.
5. Enclose springs, spring-fed streams, and spring-ponds.

VITA

The author, born on December 11, 1967, in Roanoke, Virginia, was graduated from the University of Virginia in Charlottesville, with a B.A. in Psychology in 1990. In August, 1990, she enrolled in the Master of Science program in Architecture at Virginia Polytechnic Institute and State University. The author completed the requirements for the Master of Science degree in Architecture in May, 1993, and lives in Shawsville, Virginia with her family and English Bulldog.

KRISTEN D. VIAR

Kristen D. Viar