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resulting from dragging activities. In dimension, the purported phallus stones conform to typical thicknesses of the thinly laminated limestones which split off in both their horizontal and vertical planes and are subsequently rounded by weathering into cigar-like shapes. 190

It has been suggested that one or more of the Vermont stone chambers were ancient Celtic prototypes whose architectural form was copied again and again by later Vermont farmers. If this construction tradition were unique to Vermont, instead of existing also in the older New England colonies, then this possibility would merit consideration. However, the historic record makes it clear that this architectural tradition was widespread in the eastern and central United States and ranged from the seventeenth, well before Vermont settlement, through the nineteenth centuries. While Pynchon's reference to a "stone chamber" in his 1654 letter to Winthrop merits further inquiry, the evidence makes it clear that the stone chambers in Vermont are a local response to local environmental conditions. On that basis alone the chambers deserve preservation and protection as poorly known but significant aspects of rural nineteenth century Vermont.

While there appears to be no evidence of ancient pre-Columbian European settlement in Vermont, it does not mean that evidence of
ancient European settlements may not be identified in the future. In Vermont and elsewhere, there are features which are presently unexplained. For example, the “Memphremagog stone” on the Vermont-Quebec border exhibits markings which appear to be neither weathering, dragging or glacial scoriations, nor plowmarks. These markings also have no resemblance to what is presently known of Indian petroglyphs and clearly require professional study. Similarly, the grid pattern carved on a stone near the chamber built by Mr. Woodward is undoubtedly man-made. Whether it is an eighteenth or nineteenth century boundary symbol, a mason’s doodle, an aboriginal petroglyph, or something else has yet to be determined. However, as this study has shown, much of what is sometimes thought “exotic” or “mysterious” proves to be commonplace after a modicum of research. While there are still many archeological puzzles in Vermont, the stone chambers are not among them.
This article is being republished as a more detailed monograph. The Vermont stone chamber study was funded by a matching grant-in-aid from the Office of Archeology and Historic Preservation, Heritage Conservation and Recreation Service, Department of the Interior. The author gratefully acknowledges the help of all the dozens of individuals who generously provided information and encouragement and who cannot be individually listed here. I am particularly indebted to the property owners of the chambers who so freely gave of their time and privacy; to Elizabeth Sincerbeaux, John Rowell and the New England Antiquities Research Association (NEARA) who provided invaluable site information; to Cynthia Hermes who conducted the field surveys with the assistance of Ann Miller; to Charlotte McCartney who undertook the painstaking deed research and early portions of the literature research; and to the people in the reference division, Vermont Department of Libraries, and the VHS Library; to Rosa Drinkwine who, with great patience, typed the manuscript and tables over and over; and to William Haviland, Robert Neudorfer, Division colleagues Eric Gilberston and William Pinney, and Vermont History Editor H. Nicholas Muller, who reviewed various drafts of the manuscript and offered substantive comments. Nick Muller is to be especially thanked for bringing the manuscript into line. Cynthia Hermes receives the lion's share of the thanks: she conducted most of the literature research, took a huge volume of photographs, and prepared an early draft of part of the manuscript and a valuable working outline.


In contrast to this relatively recent interest in New England's stone chambers, questions about the possible exotic origins of the American Indian and possible ancient European voyages to and settlements in the New World have sparked debate in America since at least the eighteenth century. For example, the possibility of ancient Phoenician inscriptions on the "Dighton Rock" in Massachusetts was of interest to Benjamin Franklin (see Benjamin Franklin, Writings of Benjamin Franklin, 10 Vols., ed. Albert Henry Smyth, [New York: MacMillan, 1905-1907], IX, 216-248), as well as to Ezra Stiles, president of Yale from 1778 until 1795, who also commented on them in both his "Literary Diary" and "Itineraries" (letter to the author from Dorothy W. Bridgewater, Yale University Library, March 27, 1979). Interest in this subject matter, which peaked from about mid-nineteenth to early twentieth century, is summarized in two diverse but valuable works: Samuel Eliot Morison, The European Discovery of America: The Northern Voyages, A.D. 500-1600 (New York: Oxford University Press, 1971); and Robert Wauchope, Lost Tribes and Sunken Continents (Chicago: The University of Chicago Press, 1962).


Trento, Search, Fig. 2.5.


Fell, America, p. 125.


Fell, America, pp. 247-251.


Byron E. Dix, "An Early Calendar Site in Central Vermont," Occasional Publications of the Epigraphic Society, 3, No. 51 (1975), 1-3; and Byron E. Dix, "A Second Early Calendar Site in Central Vermont," Occasional Publications of the Epigraphic Society, 3, No. 61 (1976), 1-18. Although Dix to date has declared his findings tentative and has made no conclusions about the possible age and cultural-affiliations of the sites, Fell uses Dix's archeo-astronomical work to support the thesis of the chambers' great antiquity.


A brief overview of the archeological literature suggests that the oldest and best documented example of stone construction by northeastern aboriginal populations may be the stone burial mound at L'Anse A'mour, Labrador, dated to 5580 B.C. (see Robert McGhee and James A. Tuck, An Archaic Sequence from the Strait of Belle Isle, Labrador, Archeological Survey of Canada Paper No. 34 [Ottawa: National Museums of Canada, 1975], pp. 85-92.) Use of stone slab linings and/or coverings continued to be a frequent characteristic of Indian burial practices throughout the Archaic period, for example, in the lower courses of house walls and in paving stones surrounding central hearths, is found in Pre-Dorset (approximately 1850 B.C.) Inuit sites, in Dorset (approximately 800 B.C. - A.D. 500) sites and in Thule (post A.D. 1000) sites. In addition to its customary use in fire hearth construction and in tool manufacturing, Charles C. Willoughby in Antiquities of the New England Indians (Cambridge: Peabody Museum of American Archeology & Ethnology, Harvard University, 1935), pp. 292 and 161-170 documents its use as a heat source in sweat lodges and in art work, including sculptured stone faces, animal effigies and petroglyphs. Aboriginal use of standing commemorative stones has also been reported (Samuel Farrn Jarvie, "A Discourse on the Religion of the Indian Tribes of North America," New York Historical Society Collections, 3 (1921), 263).
In his article, Alfred M. Bingham, "Squatter Settlements of Freed Slaves in New England," The Connecticut Historical Society Bulletin 41, No. 3 (1976), pp. 65-80, concludes that several stone chambers in southeastern Connecticut were used, and perhaps built, by freed black slaves from estates neighboring the chambers.

A study conducted on a number of New Hampshire stone chambers concludes that at least these chambers were untypical forms of trapping cubbys used between the 1850's, or earlier, and the 1930's. See Jonathan Hall and Eric Woodman, "Beehive-Shaped Stone Structures: Ancient or Recent Origin," Man in the Northeast, 5 (1973), 60-62; Andrew Rothwell, "The Purpose of the Beehive-Shaped Stone Structures in Southeastern New Hampshire," New England Antiquities Research Association Newsletter 8, No. 1 (1975), 2-7; and Tremo, Search, pp. 44-45. Although there is no supporting evidence, some have theorized that the chambers were springhouses, as appears to be the case with some of the "beehive" chambers in central Massachusetts (Richard Rose, "Stone Beehive Structures: Myth and Reality," Northeastern Anthropological Association Meeting, Hanniker, New Hampshire, 31 March 1979; and descriptions of springhouses in Long, Pennsylvania Farms, pp. 106-112).

Over eighty town histories, many written in the nineteenth century, and a half dozen primary accounts by eighteenth and early nineteenth century travelers passing through Vermont were consulted in the course of this study. None mentioned "unusual stone chambers."

For example, in the course of studying Dutch barns John Fitchen, The New World Dutch Barn. (Syracuse: Syracuse University Press, 1968), p. 17, discovered that "deeds to the end do not record the numbers, size or disposition of any buildings thereon. It is rarely, if ever, that deeds to real estate property describe or even mention the erection of any barns." Although there are still many surviving seventeenth and eighteenth century Dutch barns, the earliest newspapers do not mention their erection: "at most, the building of a fort or a courthouse, or perhaps a church or a large mill, was recorded, but never a barn. Contemporary circumstantial accounts of any building's erection are simply nonexistent." In their study of frame dwellings in the seventeenth century colonies, Harold R. Shurtleff and Samuel Eliot Morison, The Log Cabin Myth: A Study of the Early Dwellings of the English Colonists in North America. (Cambridge, Mass.: Harvard University Press, 1933), pp. 51-55, similarly addressed the scarcity of available documentation on these structures. "The reason for this seems clear. Anything normal or usual in the colonies, such as Englishmen dwelling in the same sort of houses that they had at home, was not a subject of contemporary comment in an age that was not self-conscious about every day material things. . . . Negative evidence must be used by historians with caution and common sense. If contemporary chroniclers do not mention clothes, we are not to conclude that the colonists were naked, only that their clothing offered nothing remarkable." See also Thomas C. Hubka's study, "The Connected Farm Buildings of Northern New England." Historical New Hampshire, 32. No. 3 (1977), 87-115, ref. 91-93.

Most anthropologists have refused to consider seriously the chambers as ancient in origin and related issues, maintaining that theoretically complex issues have been presented and argued in, at best, a simplistic manner most often out of context with what is known (after many decades of work) about prehistoric Native American cultures and historic American settlement and subsistence patterns. See, for example, Glyn Daniel, "They Came Before Columbus," rev. of Fell, America B.C., New York Times Book Review, 13 March 1977, p. 8; M. Pamela Bumsled, "The Use and Misuse of Archeology," Anthropology Newsletter 19, No. 3 (1978), 14-15; Cook, ed., "Ancient Vermont," pp. 53-69; Ives Goddard and William Flachugh, "Statement on America B.C.," Man in the Northeast, in press; and John R. Cole, Cult Archaeology and Unscientific Method and Theory MS. This academic non-response or outright rejection has traditionally been perceived by many ancient European settlement proponents and their followers as intellectual snobbery, ivory-tower isolationism, fuddy-duddism, evidence of lesser minds or downright refusal to consider new ideas (see Warren L. Cook, "Reflections on the 'Ancient Vermont' Conference," in Cook, "Ancient Vermont," p. 187-27; Barry Fell, "Press Conference," in Ibid., p. 95; and Wauchope, pp. 69-82). In contrast to most of their colleagues, on the other hand, Professor Dena Dincauze, University of Massachusetts, Amherst, and Michael Roberts, Institute for Conservation Archeology, Harvard University, personally visited some of the Vermont stone chambers in 1975 and concluded that it was "reasonable and highly likely" that the structures were constructed as cold cellars for crops or ice storage (Dena Dincauze and Michael Roberts, "Notes," November 10, 1975, through the courtesy of Dena Dincauze). Richard Rose, "Stone Beehive Structures," n.p., undertook a study of stone chambers in central Massachusetts and concluded that several were built as springhouses.

The nature of such ancient European settlements is best summarized by Fell himself in America, p. 100. Phoenician voyagers from Tarshish, he states, "were probably not explorers but rather merchants trading with the New England Celts who, by that date 700-500 B.C., would already be well-established fur trappers, and very likely also mining precious metals on those sites where ancient workings have been discovered."

Anthropologically, this second level of contact describes the concept of "cultural diffusion." Geoffrey Ashe ("Conclusion" in The Quest for America, ed. Geoffrey Ashe, [New York: Praeger, 1971], p. 278)
further clarifies the distinction between these two levels of contact: "cultural diffusion across the oceans, if proved, would also prove contact. Diffusion could not have happened without it. The converse, however, does not hold. Contact could have happened without diffusion." See also Carroll L. Riley, J. Charles Kelley, Campbell W. Pennington and Robert L. Rands, eds., Man Across the Sea: Problems of Pre-Columbian Contacts. (Austin, Texas: University of Texas Press, 1971). John H. Rowe.


2Archaeological research has conclusively identified a Norse site at L'Anse Aux Meadows, Newfoundland. See Helge Ingstad, "The L'Anse Aux Meadow Site," National Geographic, 126, No. 5, (1964), 708-754; Morton, Northern Approaches, pp. 38-52, and 68-69; and Anne Stine Ingstad, The Discovery of a Norse Settlement in America (Oslo: Universitetsforlaget, 1977).


3Ibid., p. 67.

4Ibid., p. 68.


6Fell, America, p. 128, for example, attempts to pre-empt the question of missing archeological evidence by suggesting that the New England Celts lived in "skin-covered hovels of interlocked boughs. These, of course, have left absolutely no trace in either Europe or America." While evidence of skin-covered hovels would, of course, be difficult to find, evidence of Old World diseases which the settlers would have carried with them should be traceable. Long term pre-Columbian European settlement in New England would have been accompanied by disastrous smallpox and bubonic plague epidemics among the Native American populations as was the case in sixteenth and seventeenth century Mexico and South America and eighteenth century New England. For example, diseases carried by Portuguese and Basque fishermen to the Northeastern coast of America in the sixteenth century demolished huge Indian populations; the Indian mortality rate was between seventy-five and ninety percent at that time. There is no such archeological evidence for this wholesale population demise in the period of purported Celtic settlements. If Old World diseases had been transmitted to Native American populations by ancient European settlers, New England Indians should have eventually developed sufficient resistance to them so that by the seventeenth century their tolerance of European diseases would have approached that of their European contemporaries. It is a fact that it was not, hence the disastrous epidemics. (Communications with William Haviland, Department of Anthropology, University of Vermont, in January, 1979, and Peter Thomas, Department of Anthropology, University of Vermont March 14, 1979.) Prolonged trans-oceanic contact among ancient European settlers and Native American populations would, at the same time, have resulted in the transplant of New World diseases, such as syphilis, to the Old World. Again, there is no such evidence. "It is nearly certain that if syphilis were present in pre-Columbian Europe, and likely that if it were present in any of the high civilizations of the Old World engaged in long-distance commerce before 1492, one of the [30,000 ancient Egyptian and Nabian] skeletons examined by [Dr. Elliot G.] Smith [in the early twentieth century] would have shown syphilitic lesions." They did not. See Alfred W. Crosby, Jr., The Columbian Exchange: Biological and Cultural Consequences of 1492. Contributions in American Studies No. 2. (Westport, Conn.: Greenwood Press, 1972), p. 126.


“Ancient Vermont,” p. 156) are “loathe to ascribe cultural affinities, for now, to what [he had] preferred to call ‘Ancient Vermonters.’”


“Trento, Search,” pp. 53-56.


“Mark Fordman, Mystery Hill,” pp. 67-7; and Trento, Search, pp. 48-49.


“Whittall, “Pre-Colonial,”” p. 28.

“Whittall, Sean,” p. 3.


“Carter, “Commentary,”” in Ibid., p. 130.


“ibid.,” p. 115.

“Meggers, “Cultural Connections and Convergences,”” p. 512. For additional references on diffusion and required proof, see Note 22.

“Glassie, Folk Housing,” p. 8. Vermont local histories including nineteenth century summaries, and contemporary regional historians repeatedly lament the silence of most eighteenth and nineteenth century rural people. Writing in 1878, the Honorable John Gregory Goodwin, “Pre-Colonial Archeology,” p. 92-93 summarized the problem fundamental to this and similar studies: “the majority of people were modest farmers who seldom recorded the ideas, processes, and traditions behind the construction of their farms.”


Site survey forms are available from the Division for Historic Preservation for those who wish to record presently unsurveyed chambers.

Oral information was obtained through personal interviews. Informants also wrote letters, frequently unsolicited. All interview notes and correspondence are on file with the Division for Historic Preservation, Montpelier, Vermont.

Each piece of deed research averaged six hours in a town clerk’s office.

The total number of stone structures in the chamber inventory continuously changed in the course of the study as more information was obtained on individual structures. For example, chambers which upon field inspection proved to be public burial vaults located within cemeteries were eliminated from the final tally. Since this report has been in preparation, six previously unknown stone chambers from Washington and Windham Counties have been brought to our attention. Time precluded visiting any of these chambers, and most were assigned to the “unconfirmed” file. Two of the chambers, however, were both surveyed and photographed by their thorough and thoughtful owner and are included in the final tally. Recent inquiries also indicate that some chambers such as those in question were once located in Grand Isle and Lamoille Counties but have long been destroyed. Each chamber in the inventory has its own numerical designation and maintains its own identifying number throughout the text, in the Notes and in Tables.

Goodwin, Ruins of Great Ireland, p. 385. Similarly an informant reported the relatively recent destruction of three stone chambers in the vicinity of chambers No. 2, 3, and 4. Informants also report the existence of a second chamber, permanently closed off, adjacent to chamber No. 10. (Both are located in the lower floor of a barn.)


Respectively, chambers No. 47, 21, and 50.
Chamber No. 12 illustrates an entryway in a Type B Chamber.
Weathering produces a soft, brown rind on the Waits River and Gile Mountain limestones, further obscuring evidence of splitting and trimming activities. The surface is thus particularly vulnerable to scratching and marking as a consequence of removing the stone from its bed, of being scraped against, or of being deliberately marked. It is thus not surprising to find many scratched or incised stones on the chambers interior and exterior masonry, including initials, dates, and deep linear and parallel scratches particularly on lintel or ceiling stones.

Heights of doorways, which were measured from the ground surface to the base of the lintel stone, may not accurately reflect the original door height because of the unknown quantity of soil accumulation at the foot of the entryway. For example, a photograph of Chamber No. 29 in Fell, America, p. 153, (compare this photograph to Cook, "Ancient Vermont," Fig. 3) illustrates the amount of soil which had either naturally accumulated or was deliberately deposited in the entryway. Subsequent excavations of the entryway by James Whittall radically altered its appearance and confirmed that the chamber and entryway had been deliberately filled in.

Crevelling is a construction technique in which each course, or layer, of stoneworks abuts a little further out than the course below it. The lateral walls gradually slope inward and the ceiling area is consequently smaller than the floor area.

Utilization of existing bedrock is apparent in the construction of chambers Nos. 1, 9, 14, 24, 25, 29, 38 and 39.

In chambers Nos. 4 and 6 spaces between the ceiling slabs indicates that a second slab layer was superimposed on the first set of slabs at right angles to them.

Hubka, "Connected Farm Buildings," pp. 92, 98-105, and 108-109 abundantly documents the custom of saving, reusing, remodeling and relocating the various structures on the farm. For example, one-third of the pre-1880 farms in Topsfield, Mass., contained relocated structures. Records of change are difficult to trace through time.

In several cases, chambers are located along the course of the same roadway. For example, the stage road above (11m away) chamber No. 9 also runs by chamber No. 36 (80m distant), on the other side of the hill. This road connected White River Junction with Barre.

In several localities, these interwoven family relationships are frequently associated with properties on which stone chambers are located.

David L. Mansfield, Vermont Phoenix (Brattleboro), December 25, 1891.


Interview with James P. Whittall, II, April 1977. Whittall conducted archaeological test excavations in the entryway of this chamber several years ago; he has not yet published a report.


On the basis of the deed research, the lands and farms associated with the chambers were first acquired and/or settled between approximately 1780 and 1830. One farm complex, associated with chamber No. 37, does not appear on a local 1855 map but is evident on the 1899 Beers Atlas (county not identified to protect the chamber.) Precise dating of individual structures on the farm is almost impossible, particularly for the outbuildings which are so rarely cited in deeds (see also Hubka, "Connected Farm Buildings," p. 95). See also Fitchen, Dutch Barns, fa. 19; in note.


Fitchen, Dutch Barns, p. 5. This custom is mentioned often in local histories.


instances in New England are still supported by stone roof slabs, with chimney supports. These structures are found in the Town of Jamaica, New Hampshire, Vermont, Massachusetts, and Connecticut, in fact, appears to be a uniquely American feature with no direct European counterpart, see Long, Pennsylvania Farm, p. 13.

Dozens of Vermont town histories indicate that the first real homes of the settlers were log cabins. The Oread Literary Club Committee, History of Johnson, Vermont, (Essex Junction: Essex Publishing Co., 1861), p. 102 relates one particular building sequence: the settler built first a log house and barn; then, "in the year 1807 after building up his farm and being able to raise all kinds of produce, he built a small frame house. This house they occupied until 1826 when he built the present brick structure.


Henry L. and Ollalie K. Williams, Old American Houses 1700-1850 (New York: Bonanza Books, 1967), p. 47. The field team visited a number of center chimney houses presently in use. In some instances massive chimney supports with stone roof slabs are still in place, but frequently these had been taken out (and replaced by upright supports) to provide space for central heating units.

See, for example, Wilson, Hill Country, pp. 30-48.

Henry M. Seely, Third Biennial Report of the Vermont State Board of Agriculture, Manufactures, and Mining for the Years 1875-1876 (Rutland: Tuttle & Co., 1876), p. 215. Mary B. Fenn, Parish and Town, the History of New England, Vermont and New York (Taftsville: The Countryman Press, 1977), pp. 78-79, provides one especially good description of a successful mid-nineteenth century sheep farm written in 1840 by James DeLano of West Windsor: "Said farm contains 180 acres of valuable farming land and a due proportion of mowing land, plough land and pasture land. Also a good proportion of wood land consisting of Sugar Maple, Butternut, Basswood and White Ash. Most of it is young and thrifty. Also three good barns, well filled, averaging 30 and 40 feet each Barn. Also a good farmhouse. Also several outbuildings. Visible: One bole house with two cellars set on a good brick chimney and fireplace with a crane. The upper story is finished off for a wood loft with a good planed floor. Said Hall is plastered and has two windows. The building is 45 ft. by 20 in width and is spacious enough to hold and has held at one time 600 fat wether's pelts and carcasses together with 5000 lbs. of fleece wool, 1600 lbs. tallow. Also a good slaughter house. Also a good proportion of sheds to the said barns and slaughter house. Also a Chaise house and a large deep cellar under the same, large enough to hold 14 or 1500 bushels. Also a good supply of orcharding."

John B. Mead, Sixth Report Upon Vermont Agriculture by the Superintendent of Agricultural Affairs (Montpelier: Freeman Steam Printing House & Bindery, 1880), W.W. Cooke, Eleventh Vermont Agricultural Report by the State Board of Agriculture for the Years 1889-1890 (Montpelier: Argus and Patriot Book & Job Printing House, 1890), pp. 27 and 52. Wilson, Hill Country, p. 199. Webster's New International Dictionary (1942) defines silage as fodder which has been converted into succulent winter feed for livestock to replace or supplement hay and pasture through processes of fermentation. Most forage crops can be successfully made into silage if their moisture content is lowered prior to storing.
Root cultivation was not a custom which the Pilgrims brought with them. For agricultural purposes it was not introduced into England until the middle of the seventeenth century and did not become a general practice until the mid-eighteenth century. Sir Richard Weston, who introduced this new agricultural concept in 1644 after studying Flemish methods of agriculture, was regarded as "a greater benefactor than Newton." See Lord Rowland E.P. Emile, English Farming Past and Present, new 5th ed. (Chicago: Quadrangle Books, 1961), pp. 103-108 and 208. The cultivation of roots for livestock fodder was consequently not extensively practiced in the seventeenth and eighteenth centuries in southern New England colonies, and the use of roots was limited primarily to home consumption in this period (see Wilson, Hill Country, pp. 88-89).

It is unclear when root cultivation came to the foreground in agricultural significance, but by 1825 it had become of major importance in the economy of the Northeast and continued to be into the twentieth century. For example, John Beale Bordley, writing in 1799 about Pennsylvania farmers in Essays and Notes on Husbandry and Rural Affairs (Philadelphia: Thomas Dobson, 1759), p. 154, noted that "roots are seldom given to their livestock, being too little thought of." This situation soon changed in Pennsylvania. However, by 1815, John Nicholson in The Farmer's Assistant (Albany: Henry C. Southwick, 1815), p. 156, advised that it "would be a great improvement of our husbandry if our farmers and graziers, stimulated by the experience of those in Great Britain and elsewhere, would enter largely into the culture of roots and cabbages for feeding milch cows and fatting cattle." Questionnaires circulated between 1807 and 1819 by the Massachusetts Society for Promoting Agriculture show that although Massachusetts farmers of this period favored crop diversification, virtually all raised varying quantities of roots for winter and spring feeding. See Papers, Consisting of Communications Made to the Massachusetts Society for Promoting Agriculture, and Extracts (Boston: Adams and Rhodes, 1807), p. 37; and Massachusetts Agricultural Repository and Journal 3 (November 1813), 62 and 68; 3 (May 1814), 121; 3 (January 1815), 255; 3 (June 1815), 345; 4 (January 1816), 49; and 5 (January 1819), 287. By 1826, Leonard Lathrop in The Farmer's Library or Essays Designed to Encourage the Pursuits and Promote the Science of Agriculture (Windsor, Wyman Spooner, 1826), p. 165, reported that "the farmers in England, and some of the first practical farmers in the United States, do not think they can well succeed in rearing and supporting a good breed of sheep, without feeding them abundantly through the winter with succulent food, such as carrots, turnips, etc." At the height of Vermont's Sheep era in 1840, Jesse Buel in The Farmer's Companion, or Essays on the Principles and Practice of American Husbandry (Boston: Marsh, Capen, Lyon, and Webb, 1840), p. 163, wrote that root culture is "by far the best means of economically feeding and fattening farm stock, and adds greatly to the means of fertilizing the soil." The advice of these agriculturalists was heeded by many, and by 1855 Massachusetts raised per acre a greater amount of root crops than wheat (see Danhof, Change In Agriculture, p. 256).


"Orange Judd in The American Agriculturist (N.Y.: Orange Judd, 1803). 22. 177 reported that although a given weight of grain will add more pounds of flesh than the same amount of roots, yet a larger quantity of food per acre can be secured from the latter. Fifty bushels of corn is above the average yield, with fair cultivation 1200 bushels of mangel wurtzels can be produced." Three tons of mangel wurtzels or potatoes are the nutritional equivalent of one ton of hay according to Fessenden, Complete Farmer, p. 250.

"Buel, Farmer's Companion, p. 163. One indirect advantage of root cultivation was that a good root supply permitted the farmer to sell off his surplus grain and corn. See Frederick Butler, The Farmer's Manual (Hartford, Conn.: Samuel G. Goodrich, 1819), p. 32.

"Fessenden, Complete Farmer, p. 250.

of the farmers of our country valuable both for the table and for cows, hogs, and ewes."

Shep. and clover until the crop is the most profitable of any."


Fessenden, Complete Farmer, pp. 41, and 213; Alexandre Tessier, A Complete Treatise on Merinos and other Sheep (N.Y.: Economical School Office, 1811), p. 61; and Luther Tucker, ed., The Cultivator, A Monthly Journal, (N.Y.: C. Van Benthuyzen & Co., 1845), Vol. 2. Besides simultaneous feeding of several feeding proportions, crop schedules for different times of the year were recommended. For example, cattle were best fattened by staving out with root crops and finishing the process with corn and wheat (Fessenden, Complete Farmer, p. 41). Lambs should be fed old grass and clover until the beginning of autumn, followed by cabbages in mid-September; after a short time, turnips were mixed in with cabbages to prepare the lambs for their steady winter diet of turnips (Randall, The Practical Shepherd, p. 199).

Various agricultural advisors stressed the benefits of different roots, and farmers had their individual preferences. Frequently, the cultivation of a particular root crop for particular livestock was emphasized.

Tessier, Complete Treatise on Merinos, p. 59, emphasized that roots must be washed and cut up before being given to sheep. This requirement was rarely mentioned although its practice was probably common as is evident from the description of a "root slider" in Josiah T. Marshall, The Farmers and Emigrants Complete Guide (Cincinnati: Applegate & Co., 1854), p. 71 as standard, ordinary farm equipment. Jennings, Sheep, Swine and Poultry, p. 52, indicated that roots should be cooked prior to giving the livestock, although elsewhere (p. 113) he notes that all animals will eat them raw or cooked and in several instances reference is made to "steam boilers" for potatoes and other roots (Luther Tucker, The Cultivator, A Monthly Journal ... [New York: Luther Tucker & Son, 1857], Vol. 5, pp. 510-511, and Nicholson, Farmer's Assistant, pp. 255) suggesting that the practice may have been common although there is no evidence that it was a mandatory procedure.

Theyowej, 1811, Applegate & Co., 1854) p. 71 as standard, ordinary farm equipment. Jennings, Sheep, Swine and Poultry, p. 52, indicated that roots should be cooked prior to giving the livestock, although elsewhere (p. 113) he notes that all animals will eat them raw or cooked and in several instances reference is made to "steam boilers" for potatoes and other roots (Luther Tucker, The Cultivator, A Monthly Journal ... [New York: Luther Tucker & Son, 1857], Vol. 5, pp. 510-511, and Nicholson, Farmer's Assistant, pp. 255) suggesting that the practice may have been common although there is no evidence that it was a mandatory procedure.
is required to secure the roots from the frosts of winter; yet the labor and expense required for this purpose, are perhaps no greater than we expend in securing our grain and forage, if they are so great... It is the novelty of the labor, rather than the amount of it, and a want of practical knowledge in their cultivation and preservation, which intimidate and deter very many.” Lathrop, *Farmer's Library*, p. 89, believed that the task of properly storing the roots through the winter was considered an obstacle by some.

14 Samuel Swift, *Statistical and Historical Account, County of Addison, Vermont* (Middlebury: A.H. Copeland, 1859), p. 55. In general, however, roots were not an important source of livestock feed in Addison County due to the difficulties of harvesting these crops from the clay soils. Interview with Dr. Richard Hopp, Experimental Station, University of Vermont, April 14, 1978.

15 References were sometimes made to particular kinds of cellars, such as “projected cellar” or “fruit cellar,” and root cellars were known under various labels including “root house” and “muggs,” an expression used in Connecticut. Letter received from Alfred Bingham, Esq., August 7, 1978.


28 Morrell, *The American Shepherd*, p. 280. The large cellar under the carriage house on the Delano Farm in West Windsor contained 1400-1500 bushels (see Note 106).


of Pennsylvania with a sequence of early hillside dwellings, hillside barns, other banked outbuildings, and an eastern aspect; Jennings, p. 57, advised that piggeries should face south. Northern exposures were concentrated in the Chittenden County Historical Society, 1975), p. 47.

one ochre hand, whose architecture reflected the flat terrain. Temperatures known as a "henna flywheel" when outside temperatures are finally warming. Ray D. Appleton, Historical Collections, 1956), p. 89.

In fact, the lowest ground temperatures are not reached until April - an effect of delayed temperatures known as a "thermal flywheel" - when outside temperatures are finally warming. Ray Wolf, "The Good Feeling of Living in the Earth," Organic Gardening, December, 1978, pp. 58-65.

The continuity through time of this architectural tradition is particularly evident in areas of Pennsylvania with a sequence of early hillside dwellings, hillside barns, other banked outbuildings, and hillside cellars. Long, Pennsylvania Farm, pp. 13-14, 156-167, and 314-359; and letter received from William O. Hickok, Pennsylvania Historical and Museum Commission, 5 April 1978.

In the event of early settlement, was possibly ancestral to and in some cases contemporaneous with the hillside cellar. The season through time of this architectural tradition is particularly evident in areas of Pennsylvania with a sequence of early hillside dwellings, hillside barns, other banked outbuildings, and hillside cellars. Long, Pennsylvania Farm, pp. 13-14, 156-167, and 314-359; and letter received from William O. Hickok, Pennsylvania Historical and Museum Commission, 5 April 1978.

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were desirable in the construction of ice houses (Fessenden, Complete Farmer, p. 79; Allen, Rural Architecture, p. 256, and Jacques, The House, p. 149) and Fessenden, Complete Farmer, p. 45, was emphatic that "the dairy house... should not be from the south, southeast or southwest."

It is worth emphasizing that only one stone chamber in the study faced North. It is possible that this structure served as an icehouse, and, of course, any of the other chambers may also have served this function. While banked ice houses were described in various farm publications such as Horace R. Allen, The American Farm and Home Cyclopededia (Philadelphia: W.H. Thompson, Pub., 1883), p. 696, they do not appear to be the most common form. See Madison Cooper, Practical Cold Storage, The Theory, Design, and Construction of Buildings and Apparatus for the Preservation of Perishable Products... (Chicago: Nickerson & Collins Co., 1905), p. 492; Long, Pennsylvania Farm, pp. 206-217; Robert B. Thomas, The Farmer's Almanac (Boston: n. pub., 1833), n.p.; Allen, Rural Architecture, pp. 258-263; and letter and unpublished data from John Worrell, Staff Archeologist, Old Sturbridge Village, March 30, 1978.

Documented root crop yields and number of livestock suggest that root storage areas must have been large indeed. Because the few documented barn cellars held 1400-2500 bushels of roots, possibly the present sample of barn and outbuilding cellars is very incomplete. An analysis of family size, family storage needs, livestock size and livestock storage needs could help clarify the intended storage purposes of the stone chambers.


Backus et. al., Village and Farm Cottagers, p. 58. Stone was not only used for construction purposes. In the manufacture of potash, broad flat stones with carved out centers were used as bases for wooden receptacles. William H. Tucker, History of Hartford, Vermont (Burlington: The Free Press Assoc., 1889), p. 116. Soap-making tubs were attached to a long pole which in turn was supported by two large standing stones with grooves carved into their tops (Newton, Vermont Story, plate opposite p. 254). Flat stones were used for anvils (Wells, History of Newbury, p. 45) and large or distinctive stones were used as boundary markers, resulting in the frequent reference in deeds to "stake and stones." Milestones were put up along roadways and stone gateposts, fenceposts, and hitching posts of varying sizes and rock types were erected around the farmstead. Openings in stone walls were defined by stone posts. Since the posts were so deeply embedded, they were often left in the ground when the stones in the wall were removed for use elsewhere (Eric Sloane, Our Vanishing Landscape [New York: Wilfred Funk, Inc., 1955], p. 35; Howard S. Russell, A Long Deep Furrow [Hanover, N.H.: University Press of New England, 1976], pp. 36 and 188). At an early date large stones were believed to have special properties and "soil that is occupied by a large stone is better than the rest of the field."

Todd, The Young Farmer's Manual, pp. 164-165, also pp. 158-159; and Edward Shaw, Operative Masonry, or, A Theoretical and Practical Treatise of Building... (Boston: Marsh, Capen, & Lyon, 1839), pp. 36-37. Allen, Rural Architecture, p. 38; and Shaw, Operative Masonry, p. 37.

Jacques, The House, p. 159.


"Ibid., p. 160-163.


"Charles Hummel, "The Business of Woodworking, 1700-1840," Tools and Technologies: America's Wooden Age Seminar Series, Fleming Museum, Nov. 6, 1978. In his study of connected farms, Hubka, "Connected Farm Buildings," pp. 101-109, and ref. p. 109 abundantly documents the strong tradition of relocating buildings, either disassembled or intact; "the frequency of moving major existing buildings, when recorded, appears staggering to a contemporary observer (the movement of smaller sheds, houses, and barns occurred with greater frequency and was seldom recorded)."

Hil michel, Early Plainfield, p. 21.


Essex, Grand Isle, Franklin, Caledonia, and Orange Counties have only partially been surveyed.

Chester Libby, National Register of Historic Places Nomination Form, prepared in 1974, on file at the Division for Historic Preservation, Montpelier.


Corinth Historical Committee, History of Corinth, Vermont (West Topsham, Vermont: Town of

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See Fell, *America*, pp. 135, 141, 142 and 153 in reference to "Calendar Site I" (Chamber No. 36) and pp. 141 and 238 in reference to the "temple to the Mother Goddess" (Chamber No. 14).


See Cook, *Ancient Vermont*, Fig. 4.

Personal interview with Dr. Charles Ratte, Vermont State Geologist, June 1977. See Cook, *Ancient Vermont*, Figs. 38 and 59; and Fell, *America*, pp. 236, 238, and 243. On the basis of this ceiling "figure," Fell infers "that this temple was visited by both Celts and Phoenician visitors from Tarshish."

See Cook, *Ancient Vermont*, Figs. 7, 8, 10, 23, 42 and 49.


Report received from Professor Brewer Baldwin, Middlebury College, June 27, 1977; memorandum received from Dr. Charles Ratte, Vermont State Geologist, June 20, 1977; and Wallace M. Cady, "Stratigraphy and Structure of West-Central Vermont," *Bulletin of the Geological Society of America*, May 1945, pp. 550-551, especially Plate 3, Figs. 1-3.

Cook, *Ancient Vermont*, Fig. 31 and Figs. 28, 32 and 54-56; also Cook, "Discussion," *Ibid*., p. 115.


*Ibid.*, Fig. 9.