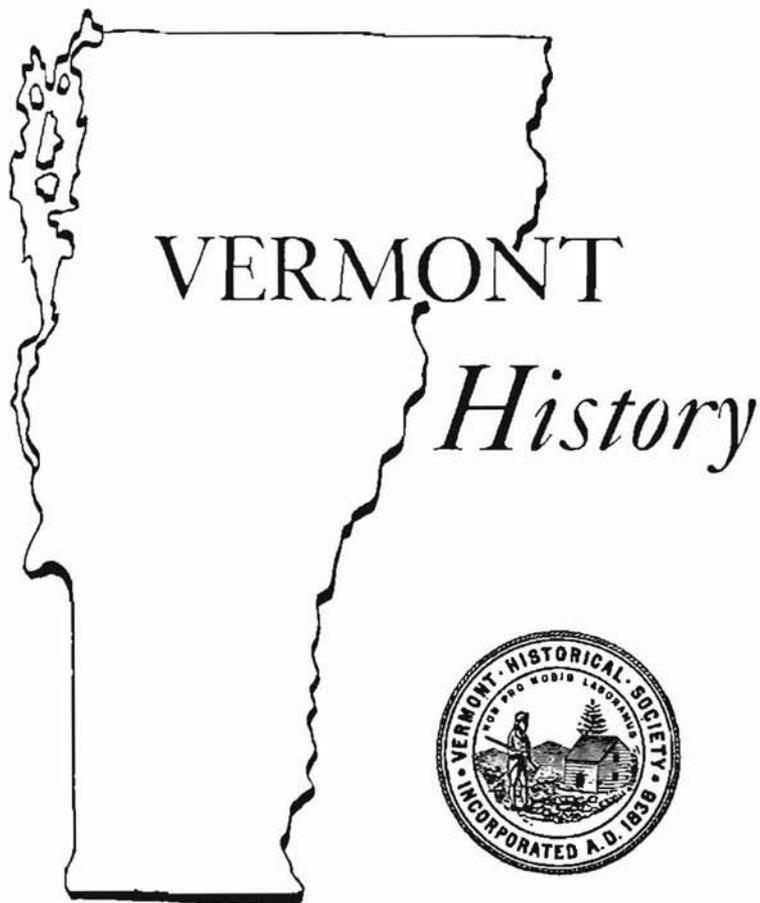


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Chamber No. 36. Passage entry to chamber; main portion of chamber has collapsed.

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.¹⁹¹ 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.¹⁹² 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.

¹This 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 Gilbertson 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.

For many years, the "Mystery Hill" site (also known as Pattee's Cave) in North Salem, N.H. was, in particular, the focus of this speculation. See, for example, William B. Goodwin, *The Ruins of Great Ireland in New England* (Boston: Meador Publishing Co., 1946); Hugh Hencken, "The 'Irish' Monastery at North Salem, New Hampshire," *New England Quarterly*, 12 (1939), 429-442; Hugh Hencken, "What are Pattee's Caves?," *Scientific American*, November, 1940, pp. 258-259; and Gary S. Vesclius, "The Antiquity of Pattee's Caves," Report to the Early Sites Foundation (Hanover, N.H.: The Early Sites Foundation, 1955), unpublished manuscript. This site continues to be the source of much conjecture and debate. See, for example, Mark Feldman, *The Mystery Hill Story* (North Salem, N.H.: Mystery Hill Press, 1977); numerous articles in *The New England Antiquities Research Association (NEARA) Newsletter*, the *Early Sites Research Society Bulletin and Work Reports*; and Glyn Daniel, Editorial, *Antiquity*, 46 (1972), 1-7. While Goodwin only gives passing mention to stone chambers in Vermont, William S. Godfrey, "A Stone Structure in Hancock, Vermont," *Vermont History*, 23, No. 1 (Winter, 1955), pp. 60-62, presents an early evaluation of a Vermont stone chamber.

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, 246-248), 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).

²Popular books and articles which have received wide circulation include Barry Fell, *America B.C.* (New York: Quadrangle/The New York Times Book Co., 1976); Salvatore Michael Trento, *The Search For Lost America* (Chicago: Contemporary Books, Inc., 1978); Warren L. Cook, ed., "Ancient Vermont," *Proceedings of the Castleton Conference, Castleton State College* (Rutland, Vt.: Academy Books of Rutland, 1978); Barry Fell, "Columbus was a Johnny-Come-Lately," *Saturday Review*, October 16, 1976, pp. 16-19; Dewitt Copp, "Goodbye Columbus or, was Massasoit a Celt?," *Country Journal*, August 1976, pp. 59-69; and Thomas Fleming, "Who Really Discovered America?," *Reader's Digest*, February 1977, pp. 69-73. Media interest is apparent in dozens of newspaper stories written since 1975. While most stories have appeared in Vermont dailies, such as the *Rutland Herald* and *Burlington Free Press*, coverage includes the *London Times* (January 30, 1978) and the *Boston Globe* (February 12, 1978). See a sample of Vermont media coverage in John R. Cole, "Barry Fell, *America B.C.*, and A Cargo Cult in Archeology," *New York State Archeological Association Bulletin*, 74, November 1978, 1-10.

³Trento, *Search*, Fig. 2.5.

⁴Brief construction or contextual descriptions of burial vaults are found in John Gregory, *Centennial Proceedings and Historical Incidents of the Early Settlers of Northfield, Vt.* (Montpelier, Vt.: Argus and Patriot Book and Job Printing House, 1878), pp. 302-3; Cecile B. and Mildred B. Hay, *History of Derby* (Littleton, N.H.: Courier Printing Co., Inc., 1967), p. 108; William M. Newton, *History of Barnard, Vt.* (Montpelier, Vt.: Vermont Historical Society, 1928), pp. 216-217; Interview (September 1978) with Leon Dean, Burlington, Vt., founder of Vermont Old Cemeteries Association. For charcoal

and lime kilns, see Amos Long, *The Pennsylvania German Family Farm*, Publications of the Pennsylvania German Society, Vol. 6 (Breinigsville, Pa.: The Pennsylvania German Society, 1972), 469-487; and Arthur W. Wall, "Lime Kilns of Rockport," *Down East Magazine*, May 1969, pp. 32-55; For potash burners, see George A. Russell, comp., "Articles on the Potash Industry Transcribed from Various Sources," *Bulletin of the Business Historical Society* [Arlington, Vt.], 7, No. 3 (1933), pp. 11-14; and William Shotwell, "An Address to the Manufacturers of Pot and Pearl Ash," in *The Act of Congress for Promoting the Progress of Useful Arts* (New York: Childs & Swaine, 1791), pp. 9-26. For iron furnaces, see J.P. Lesley, *The Iron Manufacturers Guide to the Furnaces & Rolling Mills of the United States* (New York: John Wiley, 1859); William Neilson, *Charcoal and Blast Furnaces, Rolling Mills, Forges & Steel Works of New England in 1866* (American Iron & Steel Institute, 1867); and Victor R. Rolando, *A Survey of the Stone Blast Furnaces of New England and Eastern New York State* (n.p., 1977).

³Barry Fell, "Celtic Iberian Inscriptions of New England," *Occasional Publications of the Epigraphic Society*, 3, No. 50 (1975), 1-5. See also Barry Fell, "The Romano-Celtic Phase at Mystery Hill, New Hampshire, in New England," *Occasional Publications of the Epigraphic Society*, 3, No. 67 (1975), 1-3.

⁴Fell, *America*, p. 125.

⁵*Ibid.*, p. 91.

⁶*Ibid.*, p. 7.

⁷See *Ibid.*, pp. 219-245; Cook, "Ancient Vermont" pp. 6-9, Figs. 42-48, 50-64 and throughout.

⁸Trento, *Search*, pp. 31-43; Salvatore Michael Trento, "A Preliminary Report: Some Stone Structures in America," *Anthropological Journal of Canada*, 16, No. 2 (1978), 18-20; Fell, *America*, pp. 130-134, 147, 151, 154, and 199; Barry Fell and John Williams, "Inscribed Sarsen Stones in Vermont," *Occasional Publications of the Epigraphic Society*, 3, No. 53, (1975), pp. 1-2; Cook, "Ancient Vermont," Figs. 40, and 41.

⁹Fell, *America*, pp. 247-251.

¹⁰Trento, *Search*, pp. 71-77 and 193-194; James P. Whittall, II, *Sean Seomraí Cloiche De An Nua-Shasana* [trans. Ancient Stone Chambers of New England] (Danielson, Conn.: Early Sites Research Society, 1977), n.p.; James P. Whittall, II, "Pre-Colonial New England - Western Europe Architectural Affinities," in Cook, "Ancient Vermont," pp. 28-30; Fell, *America*, p. 96, and 127-128; and Barry Fell, "Vermont's Ancient Sites and the Larger Picture of Trans-Atlantic Visitations to America, B.C.," in Cook, "Ancient Vermont," p. 74.

¹¹Byron 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.

¹²Warren L. Cook, "Vermont's Lithic Sites and Artifacts," in Cook, "Ancient Vermont," p. 8.

¹³A 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 Amour, 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 (until approximately 1000 B.C.) from Labrador to Massachusetts and New York as documented by William W. Fitzhugh in "Indian and Eskimo/Inuit Settlement History in Labrador: An Archeological View," in *Our Footprints are Everywhere*, ed. Carol Brice-Bennett (Nain, Labrador: Labrador Inuit Association, 1977), p. 9; Dena F. Dincauze in *Cremation Cemeteries in Eastern Massachusetts*, Papers of the Peabody Museum of Archeology & Ethnology, Vol. 59, No. 1 (Cambridge, Mass., Harvard University, 1968); and William Ritchie in *The Archeology of New York State* (Garden City, N.Y.: The Natural History Press, 1965), pp. 213-225. However, use of stone in burials is absent in the Maritime Provinces and rare in Maine (telephone interview with David Sanger, Professor of Anthropology, University of Maine Orono, Nov. 1978; and Warren K. Moorhead, *The Archeology of Maine* (Andover, Mass.: Andover Press, 1922), pp. 90, and 92-93). In Labrador and elsewhere in Northeastern Canada use of stone in dwelling construction, 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 Farnar Jarvis, "A Discourse on the Religion of the Indian Tribes of North America," *New York Historical Society Collections*, 3 (1921), 263).

¹⁶In 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.

¹⁷A 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 1880'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 Rothovius, "The Purpose of the Beehive-Shaped Stone Structures in Southwestern New Hampshire," *New England Antiquities Research Association Newsletter* 8, No. 1 (1973), 2-7; and Trento, *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, Henniker, New Hampshire, 31 March 1979; and descriptions of springhouses in Long, *Pennsylvania Farm*, pp. 106-112).

¹⁸Over 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."

¹⁹For 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 rare, 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, 1939), 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.

²⁰Most 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. Pamala Bumsted, "The Use and Misuse of Archeology," *Anthropology Newsletter* 19, No. 3 (1978), 14-15; Cook, ed., "Ancient Vermont", pp. 62-69; Ives Goddard and William Fitzhugh, "Statement on America B.C.," *Man in the Northeast*, in press, and John R. Cole, *Cult Archeology 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. 132-7; 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.

²¹The 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 [700-600 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."

²²Anthropologically, 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, "Diffusionism and Archeology," *American Antiquity*, 31, No. 3, pt. 1 (1966), 334-337; and Marion J. Mochon, "The Nature of Theory and Its Validation: Transpacific Origins?" *American Anthropologist*, 78, No. 1 (1976), 106-110.

²³Archeological research has conclusively identified a Norse site at L'Anse Aux Meadow, Newfoundland. See Helge Ingstad, "The L'Anse Aux Meadow Site," *National Geographic* 126, No. 5, (1964), 708-734; Morison, *Northern Approaches*, pp. 38-52, and 68-69; and Anne Stine Ingstad, *The Discovery of a Norse Settlement in America* (Oslo: Universitetsforlaget, 1977).

²⁴John Cole, "Anthropology Beyond the Fringe: Ancient Inscriptions, Early Man, and Scientific Method," *The Skeptical Inquirer*, Spring/Summer (1978), pp. 67.

²⁵*Ibid.*, p. 67.

²⁶*Ibid.*, p. 68.

²⁷Peter Reynold, "Commentary" in Cook, "*Ancient Vermont*," p. 58.

²⁸Fell, *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 sixteenth 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 transmittal 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 1493, one of the [30,000 ancient Egyptian and Nubian] 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.

²⁹See Goddard and Fitzhugh, "Statement on America B.C., *Man In the Northeast*, in press; Ives Goddard, "Eastern Algonquian Languages," in *Handbook of North American Indians*, ed. William C. Sturtevant, Vol. 15, (Washington, D.C.: Smithsonian Institution, 1978), 70-77.

³⁰Betty Meggers, "North and South American Cultural Connections and Convergences," in *Pre-historic Man in the New World*, eds. J.D. Jennings and E. Norbeck (Chicago: University of Chicago Press, 1964), pp. 513; and Rowe, "Diffusionism and Technology," 334-337.

³¹Stephen Jett, "Diffusion Versus Independent Development," in *Man Across the Sea*, ed. Carroll L. Riley, et. al. (Austin, Texas: University of Texas Press, 1971), p. 32.

³²Anne Ross and Peter Reynolds, "*Ancient Vermont*," *Antiquity* 52, No. 205 (1978), 100-107. The same article is printed in Cook, "*Ancient Vermont*," pp. 139-147.

³³See Donald B. Marsh, "The Stone Winter Houses of the Sadlermiut," *The Beaver*, Winter, 1976, pp. 36-39.

³⁴See Edward Allen, *Stone Shelters* (Cambridge, Mass.: MIT Press, 1969).

³⁵See James P. Whittall, II, "Pre-Columbian Parallels Between Mediterranean and New England Archeology," *Occasional Publications of the Epigraphic Society*, 3, No. 52 (1975) pp. 1-5; Whittall, Sean, n.p.; Whittall, "Pre-Colonial," pp. 28-30; Michael F. Doran and Bernd Künnecke, "The Stone Enigmas of New England," *Anthropological Journal of Canada*, 15, No. 2 (1977), 17-22; and Fell, *America*, pp. 81 and 134.

³⁶Cook, "Reflections," in Cook, "*Ancient Vermont*," p. 132.

³²Fell, *America*, pp. 134 and 81-142. It must be emphasized that although Fell focuses upon a "Celtic" thesis of ancient settlement, others, such as Professor Warren Cook ("Reflections," in Cook, "Ancient Vermont," p. 136) are "loathe to ascribe cultural affinities, for now, to what [he had] preferred to call 'Ancient Vermonters'."

³³Fell, *America*, pp. 134-135 and 151.

³⁴Trento, *Search*, pp. 53-56.

³⁵Cook, "Vermont's Lithic Sites," in Cook, "Ancient Vermont," p. 6.

³⁶Mark Feldman, *Mystery Hill*, pp. 6-7; and Trento, *Search*, pp. 48-49.

³⁷Cook, "Vermont's Lithic Sites," in Cook, "Ancient Vermont," p. 6.

³⁸George Carter, Commentary, in *Ibid.*, p. 130. See Norman Totten, "The First European Colonists in New England," *Occasional Publications of the Epigraphic Society*, 3, No. 49 (1975), 2.

³⁹Trento, *Search*, p. 51.

⁴⁰Whittall, "Pre-Colonial," p. 28.

⁴¹Whittall, *Sean*, p. 3.

⁴²Giovanna Neudorfer, "A Preliminary Analysis of Vermont's Stone Chambers," in Cook, "Ancient Vermont," pp. 9-13.

⁴³Carter, "Commentary," in *Ibid.*, p. 130.

⁴⁴See Henry Glassie, *Folk Housing in Middle Virginia* (Knoxville: University of Tennessee Press, 1975), p. 114-115.

⁴⁵*Ibid.*, p. 115.

⁴⁶Meggess, "Cultural Connections and Convergences," p. 512. For additional references on diffusion and required proof, see Note 22.

⁴⁷Glassie, *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 *The Centennial Proceedings...of Northfield* (Montpelier: Argus and Patriot, 1878), p. 23, wrote that "commencing at a late date to gather historical incidents, the compiler has been somewhat embarrassed by finding them so meagre." Hubka, "Connected Farm Buildings," 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."

⁴⁸See Leroy Johnson, "Problems in 'Avant-Garde' Archeology," *American Anthropologist*, 74, No. 3 (1972), 366-377.

⁴⁹Site survey forms are available from the Division for Historic Preservation for those who wish to record presently unsurveyed chambers.

⁵⁰Oral 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.

⁵¹Each piece of deed research averaged six hours in a town clerk's office.

⁵²The 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 stone 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.

⁵³Goodwin, *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).

⁵⁴This discussion uses physiographic subdivisions as defined by David P. Stewart, *The Glacial Geology of Vermont*, Vermont Geological Survey, Bulletin No. 19 (Montpelier, Vt.: Vermont Development Department, 1961), p. 45. See also *Vermont Land Capability*, (Montpelier: Vermont State Planning Office, 1974) p. 11.

⁵⁵See Elbridge Churchill Jacobs, *The Physical Features of Vermont* (Montpelier: Vt. State Development Commission, 1950), pp. 57-86; R.J. Hopp, R.E. Lautzenheiser, and K.E. Varney, *Growing Degree Days in Vermont*, Agricultural Experiment Station, Bulletin 654 (Burlington: University of Vermont, 1968), pp. 1-16.

⁵⁶Respectively, chambers No. 47, 21, and 50.

⁴²Jacobs, *Physical Features*, pp. 33, 36, and 81; Bertram G. Woodland, *The Geology of the Burke Quadrangle, Vermont*, Vermont Geological Survey, Bulletin No. 28 (Montpelier: Vermont Development Department, 1965), p. 23; Ernest H. Ern, Jr., *Bedrock Geology of The Randolph Quadrangle*, Vermont Geological Survey, Bulletin No. 21 (Montpelier: Vermont Development Department, 1963), pp. 46-47; and Charles G. Doll, ed. and comp., *Centennial Geologic Map of Vermont* (Montpelier, 1961).

⁴³Ping Hsi Chang, Ernest H. Ern, Jr., and James B. Thompson, Jr., *Bedrock Geology of the Woodstock Quadrangle, Vermont*, Vermont Geological Survey, Bulletin No. 29 (Montpelier: Vermont Water Resources Department, 1965), p. 41; and Ern, *Bedrock Geology*, pp. 40-45.

⁴⁴Jacobs, *Physical Features* pp. 36-37; Ern, *Bedrock Geology*, p. 47; and James B. Hadley, *Geology of the Bradford-Thetford Area, Orange County, Vermont*, Vermont Geological Survey, Bulletin No. 1 (Montpelier: Vermont Development Commission, 1950), pp. 19-21.

⁴⁵Doll, n.p.; Philip H. Osberg, *The Green Mountain Anticlinorium in the Vicinity of Rochester and Middlebury, Vermont*, Vermont Geological Survey, Bulletin No. 5 (Montpelier, Vermont: Vermont Development Commission, 1952), pp. 55-65.

⁴⁶The only lowland chamber is No. 50.

⁴⁷Tree borings were obtained and analyzed by John Boutin, Vermont Department of Forest and Parks.

⁴⁸Chambers Nos. 11 and 28, respectively. Although attached to another structure, chamber No. 28 is also incorporated into a hillside.

⁴⁹Unlike the other chambers whose lengthwise axis lies into the slope of the hill, chamber No. 9 is positioned *across* the slope. The chamber entry consequently faces the nearby old roadway.

⁵⁰The completely unrounded type A chambers are Nos. 8 and 32, located entirely within the lower floors of larger structures, and chambers Nos. 13, 23, 30, 57, and 54 situated within abandoned house foundations.

⁵¹Chamber No. 3 is a unique structure because of its subterranean construction and tiny entry hole and has been the focus of recent archeological investigations by James Whittall. Test excavations within the chamber and in its vicinity yielded a radiocarbon date of approximately 500 A.D. from a single charcoal sample. See Deborah Graham, "Professor 'Proves' Pre-Viking Habitation in Vermont, But Others Still Skeptical," *The Times Argus* [Barre-Montpelier, Vt.], November 17, 1978, p. 7; and "Ancient Sites: Celts or Cellars?", *Vermont Vanguard Press* [Burlington], 1, No. 44, 28, Nov. 1978. This date may relate to an old forest fire and in no way proves the antiquity of the chamber. Its reliability must be evaluated in terms of the integrity and context of the charcoal sample and must be confirmed by additional dates.



Chamber No. 12 illustrates an entryway in a Type B Chamber.

²³Weathering 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.

²⁴Heights 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.

²⁵Corbelling is a construction technique in which each course, or layer, of stonework 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.

²⁶Utilization of existing bedrock is apparent in the construction of chambers Nos. 1, 9, 14, 24, 25, 29, 38 and 39.

²⁷In 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.

²⁸Hubka, "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-1890 farms in Topsfield, Mass., contained relocated structures. Records of change are difficult to trace through time.

²⁹In 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.

³⁰In several localities, these interwoven family relationships are frequently associated with properties on which stone chambers are located.

³¹David L. Mansfield, *Vermont Phoenix* (Brattleboro), December 25, 1891.

³²Ellen Mayhew, "Oliver Plaisted Built Cave Home in East Barnard to Escape Draft," *Valley News*, October 1968; and Hope Nash, *History of Royalton, Vermont* (So. Royalton: Town of Royalton, So. Royalton's Woman's Club, Royalton Historical Society, 1975), p. 117.

³³Jan Vansina, *Oral Tradition: A Study in Historical Methodology* (London: K. Paul, 1961), p. 1.

³⁴Interview with James P. Whittall, II, April 1977. Whittall conducted archeological test excavations in the entryway of this chamber several years ago; he has not yet published a report.

³⁵John W. St. Croix, *Historical Highlights of the Town of Hartford* (Hartford: Imperial Co., 1974), p. 41.

³⁶On 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 1869 *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. 93). See also Fitchen, *Dutch Barn*, fu. 19, in note.

³⁷Harold F. Wilson, *The Hill Country of Northern New England: Its Social and Economic History, 1790-1930* (New York: Columbia University Press, 1936), pp. 16-17, and 124-131; E.R. Pember, "Our Hill Farms," *Eighth Vermont Agricultural Report*, (Burlington, Vt., 1884), pp. 362-370; Douglas R. McManis, *Colonial New England* (N.Y.: Oxford University Press, 1975), pp. 65-66; and Rodney C. Lochr, "Self sufficiency on the Farm," *Agricultural History*, 26 (1952), 37-41. The make-up and layout of the first Vermont homesteads are poorly documented, and descriptions of outbuildings are virtually absent.

³⁸Myra Himelhoch, *Early Plainfield and Its People* (Plainfield: Himelhoch, 1965), p. 12; Frederic P. Wells, *History of Newbury, Vermont* (St. Johnsbury: The Caledonia Co., 1902), p. 18; B. Frisbie, J. Joslin, and F. Ruggles, *A History of the Town of Poulney, Vt.: From its Settlement to the Year 1875* (Poulney: Journal Printing Office, 1875), p. 23; and A.M. Gaverly, *History of the Town of Pittsford, Vermont* (Rutland, Vt.: Tuttle & Co., 1872), p. 28. Repeated reference in these histories to "rude huts" and "shanties" suggests that research on temporary quarters was often not original.

³⁹Fitchen, *Dutch Barns*, p. 5. This custom is mentioned often in local histories.

⁴⁰Fiske Kimball, *Domestic Architecture of the American Colonies and of the Early Republic* (New York: Charles Scribner's Sons, 1922), pp. 3-8; and Shurtleff and Morison, *Log Cabin Myth*, pp. 20-22.

⁴¹Carl Bridenbaugh, *Cities of the Wilderness: The First Century of Urban Life in America, 1625-1742* (New York: The Ronald Press, 1938) p. 8.

⁹¹William B. Weedon, *Economic and Social History of New England, 1620-1789*, (Boston: Houghton, Mifflin & Co., 1891), I, p. 214; Gerald F. DeJong, *The Dutch In America, 1609-1974* (Boston: Twayne Pub., 1975) p. 72; and Alonzo Lewis and James R. Newhall, *History of Lynn, Essex County, Mass.* (Boston: John L. Shorey, 1865), p. 114.

⁹²George F. Dow, *Everyday Life in the Massachusetts Bay Colony* (Boston: Society for the Preservation of New England Antiquities, 1935), p. 17; Martin S. Briggs, *The Homes of the Pilgrim Fathers in England and America (1620-1685)*, (New York: Oxford University Press, 1932), p. 122, and 154; and William DeLoss Love, *The Colonial History of Hartford* (Hartford, Conn., 1955), pp. 15-16.

⁹³Kimball, p. 3.

⁹⁴Norman M. Isham and Albert Brown, *Early Connecticut Houses: An Historical and Architectural Study* (Providence: Preston & Rounds Co., 1900) p. 13.

⁹⁵Long, *Pennsylvania Farm*, p. 13.

⁹⁶Wisconsin is called the "Badger" state precisely because of the traditional use of temporary hillside dwellings by the early settlers, particularly the Cornish and the Norwegians. Letter received from Katherine E. Hundt, State Historical Society of Wisconsin, October 7, 1977; and Halvor L. Skavlem, *The Skavlem and Odegaard Families* (Madison: Wisconsin Historical Society, 1915) pp. 26-27.

⁹⁷Robert W. Shoppell, *How to Build, Furnish and Decorate . . .* (New York: The Cooperative Building Plan Association, 1883), n.p.

⁹⁸The banked form of barn, in fact, appears to be a uniquely American feature with no direct European counterpart, see Long, *Pennsylvania Farm*, p. 358.

⁹⁹Dozens 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., 1961), 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." For other particulars, see Samuel Swift, *History of the Town of Middlebury* (1859, Rpt. Rutland, Vermont: Charles E. Tuttle Co., 1971), p. 167; and D.P. Thompson, *History of the Town of Montpelier 1781-1860* (Montpelier: E.P. Walton, 1860), p. 40.

¹⁰⁰Frederick J. Kelly, *The Early Domestic Architecture of Connecticut* (New Haven: Yale University Press, 1924), p. 71.

¹⁰¹Henry L. and Otalie 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.

¹⁰²See, for example, Wilson, *Hill Country*, pp. 30-48.

¹⁰³*Ibid.*, p. 80.

¹⁰⁴Earle Newton, *The Vermont Story* (Montpelier: Vermont Historical Society, 1949), p. 166.

¹⁰⁵C. Benton and S.F. Barry, *A Statistical View of the Number of Sheep in the Several Towns and Counties in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania and Ohio . . .* (Cambridge, Mass.: Folsom, Wells, & Thurston, 1837).

¹⁰⁶Henry 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. 213. Mary B. Fern, *Parish and Town, the History of West Windsor, Vermont* (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 Jabez 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 outhouses, Viz: One Boil house with two cauldrons set and 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 Fr. 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."

¹⁰⁷John 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 32; 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.

¹⁰⁸Wilson, *Hill Country*, p. 123; and Clarence H. Danhof, *Change in Agriculture: The Northern United States, 1820-1870* (Cambridge, Mass.: Harvard University Press, 1969), pp. 251-254.

¹⁰⁹Vermont Agricultural Experiment Station, *Sheep in Vermont*, Pamphlet No. 27 (Burlington: University of Vermont and State Agricultural College, 1952).

¹¹⁰Root 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. Ermlé, *English Farming Past and Present*, new 6th 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, 1799), p. 134, 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 fattening 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), 265; 3 (June 1815), 343; 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).

¹¹¹Ora Paul, "Home Productions," in *Fifth Report of the Vermont Board of Agriculture, for the Year 1878*, ed. Henry M. Seely (Montpelier: J. & J.M. Poland, 1878), p. 182.

¹¹²Henry Safford, "Farm Buildings," in *Third Biennial Report of the Vermont Board of Agriculture, Manufactures, & Mining for the Years 1875-76*, ed. Henry M. Seely (Rutland: Tuttle & Co., 1876), p. 344.

¹¹³Henry S. Randall, *The Practical Shepherd: A Complete Treatise on the Breeding, Management and Diseases of Sheep* (Rochester, N.Y.: D.D.T. Moore, 1864), p. 234; and Thomas G. Fessenden, *The Complete Farmer and Rural Economist* (Boston: Otis, Broaders, & Co., 1842), p. 213.

¹¹⁴Lathrop, *Farmer's Library*, pp. 154-155; Henry Stewart, *The Shepherd's Manual. A Practical Treatise on the Sheep Designed Especially for American Shepherds* (N.Y.: Orange Judd Co., 1890) p. 63; and Fessenden, *Complete Farmer*, p. 41.

¹¹⁵Orange Judd in *The American Agriculturist* (N.Y.: Orange Judd, 1863), 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.

¹¹⁶Buel, *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.

¹¹⁷Fessenden, *Complete Farmer*, p. 250.

¹¹⁸Henry Stephens, *The Farmer's Guide to Scientific and Practical Agriculture Detailing the Labors of the Farmer in All Their Variety, and Adapting Them to the Seasons of the Year as They Successively Occur* (N.Y.: Leonard Scott & Co., 1858) p. 202.

¹¹⁹Fessenden, *Complete Farmer*, p. 248.

¹²⁰*Ibid.*, pp. 213, and 248; Stephens, p. 202; Robert R. Livingston, *Essay on Sheep* (Concord, N.H.: Daniel Cooledge, 1813), p. 111. Root crops were essential for pregnant and nursing ewes (Livingstone, *Essay on Sheep*, pp. 46, 52, and 58); for fattening sheep in general (L.A. Morrell, *The American Shepherd: Being a History of the Sheep with Their Breeds, Management, and Diseases* [New York: Harper & Bros., 1854], p. 237; and Butler, *Farmer's Manual*, p. 118); for the few days before turning the flocks out to pasture in the spring (Robert Jennings, *Sheep, Swine and Poultry* . . . [Philadelphia: J.E. Potter & Co., 1864], p. 129); and for ensuring that the sheep were fed in late fall prior to the start of winter (Henry S. Randall, *The Practical Shepherd: A Complete Treatise on the Breeding, Management and Diseases of Sheep* [Rochester, N.Y.: D.D.T. Moore, 1864], p. 202). For cows, daily feeding on root crops assured a winter milk production equal to the summer's yield (Fessenden, p. 248; Nicholson, p. 153).

¹²¹Fessenden, *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 Benthuysen & Co., 1845), Vol. 2. Besides simultaneous feeding of several feeds in differing proportions, crop schedules for different times of the year were recommended. For example, cattle were best fattened by starting out with root crops and finishing the process with corn and wheat (Fessenden, *Complete Farmer*, p. 45). 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. Butler, *Farmer's Manual*, pp. 58, and 118, was emphatic about the excellence of the potato, which was found "by the experience of the best farmers, to exceed in value any other feeding; even the Indian corn." Potatoes were thought by some to be particularly important for hogs (*Ibid.*, p. 26, and oxen (Fessenden, *Complete Farmer*, 1823) p. 278, although other writers such as Arthur Young in *The Farmer's Letters to the People of England* . . . (London: n.p., 1821), p. 165; and Randall, *The Practical Shepherd*, p. 202, advised that any kind of root crop could be fed to any type of livestock. Joseph N. Harris, *History of Ludlow, Vermont* (Charlestown, N.H.: Mrs. Ina Harris Harding, Mr. Archie Frank Harding, 1949), p. 73, reports that in Cavendish in 1838 the Mayo brothers raised 1100 bushels of potatoes on two acres of land. Potatoes also grew well in Addison and Chittenden Counties, producing yields of 200 to 500 bushels per acre according to Luther Tucker, ed., *The Cultivator, A Monthly Journal* (N.Y.: C. Van Benthuysen & Co., 1845), p. 219. One Shelburne farmer, for example, predominantly raised peas and potatoes as winter feed for his 2000 sheep and other livestock (Tucker, *The Cultivator*, pp. 257-258). Fessenden, *Complete Farmer*, pp. 248-250, reported on the advantages of the mangel-wurzel which he valued much higher than the potato, and in an earlier article in *The New England Farmer, and Horticultural Journal* . . . (Boston: Thomas W. Shepard, 1823), Vol. 1, p. 401 he mentioned that Jerusalem artichokes were preferable to turnips or potatoes because they were easier to grow. Butler, *Farmer's Manual*, p. 32, on the other hand, declared the rutabaga, also known as "Swedes" or Swedish turnips, "an object worthy of the attention of the farmers of our country . . . valuable both for the table and for cows, hogs, and ewes." L.C. Fisher, a farmer in Cabot, advised in "Winter Management of Neat Stock," *Third Biennial Report of the Vermont State Board of Agriculture, Manufacturing & Mining*, ed. Henry Seely (Rutland: Tuttle & Co., 1876) p. 113, that "the root crop should be made a speciality . . . and the turnip crop is the most profitable of any."

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 slicer" 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. 310-311, and Nicholson, *Farmer's Assistant*, p. 253) suggesting that the practice may have been common although there is no evidence that it was a mandatory procedure.

¹²²Wm. "Home Productions," p. 182, reported that "it is almost unheard of in some sections, and in others practiced so slightly that no legitimate conclusions can be drawn as to the results obtained . . ." For example, William Jarvis of Weathersfield, who introduced the Merino sheep into Vermont in 1811, apparently did not raise roots at all and, in 1837, wrote that hay and oats were the best feed for his sheep (Benton and Barry, *Statistical View of Sheep*, p. 133). Buel, *Farmer's Companion*, p. 165, attributed any resistance to root cultivation to ignorance of its benefits as well as to the tyranny of tradition: "The great obstacle to root culture, other than the potato crop, has been the labor which

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.

¹²²Samuel Swift, *Statistical and Historical Account, County of Addison, Vermont* (Middlebury: A.H. Copeland, 1859), p. 95. 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, Experiment Station, University of Vermont, April 14, 1978.

¹²³References 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.

¹²⁴Adolphus E. Rycison, *First Lessons for Canadian Farmers and Their Families* (Toronto: Copp, Clark, & Co., 1871), p. 163.

¹²⁵Benton and Barry, *Statistical View of Sheep*, p. 142.

¹²⁶Fessenden, *Complete Farmer*, p. 217.

¹²⁷Judd, *American Agriculturalist*, p. 321; Madison Cooper, *Practical Cold Storage* (Chicago: Nickerson & Collins Co., 1905), pp. 557-561.

¹²⁸Thomas G. Fessenden, *The New England Farmer and Horticultural Journal*, Vol. 7 (Boston: John B. Russell, 1829), p. 212.

¹²⁹Judd, *American Agriculturalist*, p. 321.

¹³⁰Tucker, *The Cultivator*, p. 63; see also Stephens, *Farmer's Guide*, p. 197; Butler, *Farmer's Manual*, p. 111; Thomas G. Fessenden, *The New England Farmer*, Vol. 1, 44 and 101.

¹³¹Thomas G. Fessenden, *The New England Farmer*, Vol. 3, 150; Long, *Pennsylvania Farm*, p. 159; Helen Canon, Flora Rose and Martha Van Rensselaer, Comps., *A Manual of Home-Making* (New York: The MacMillan Co., 1919), p. 586.

¹³²The custom of pit storage was known both from England and Europe, even though the relatively warmer climates of some areas mitigated the need for even this kind of storage (see Fessenden, *The New England Farmer*, 1827, pp. 397-398; Benton Barry, *Statistical View of Sheep*, p. 41; and Seely, *Third Biennial Report*, p. 351). The use of pits for storing corn, in particular, was ubiquitous among the Northeastern Indians, and the early European voyagers were sufficiently impressed with this custom that they frequently commented on it. See Dwight B. Heath, ed., *A Journal of the Pilgrims at Plymouth* (1622, rpt. New York: Corinth Books, 1963), p. 85; Marilyn C. Stewart, "Pits in the Northeast: A Typological Analysis," in *Current Perspectives in Northeastern Archeology*, ed. Robert E. Funk and Charles F. Hayes, III, *Researches and Transactions of the New York State Archeological Association*, 17, No. 1 (1977), 149-164. Aboriginal storage pits of great size, some ten feet square, were found both in Vernon, Vermont, and across the Connecticut River in New Hampshire at the seventeenth century Fort Hill Site, interview with Dr. Peter Thomas, University of Vermont, October, 1978.

¹³³Tucker, *The Cultivator*, Vol. 7, 352. A pit storage area of the type under discussion was archeologically excavated a number of years ago. Found in association with an 1815 to 1845 homestead, the large pit was oval in shape and about 84" by 102." See A.K. and R.P. Bullen, "Black Lucy's Garden," *Bulletin of the Massachusetts Archeological Society*, 6, No. 2 (1945), 17-28.

¹³⁴Fessenden, *Complete Farmer*, p. 74. See also Byron D. Halsted, *Barns, Sheds and Outbuildings* (1881), rpt. Brattleboro: Stephen Greene Press, 1977), pp. 19, 33-34, 38, 42, 44, and 76; Fessenden, *The New England Farmer*, Vol. 1, 81; Buel, *Farmer's Companion*, p. 165; J.C. Myers, *Sketches on a Tour Through the Northern and Eastern States, the Canadas and Nova Scotia* (Harrisonburg: J.H. Warunnann & Brothers, 1849), p. 259; Shoppell, n.p.; Safford, "Farm Buildings," p. 344; Stewart, *Shepherd's Manual*, p. 51; and Lewis F. Allen, *Rural Architecture . . .* (New York: C.M. Saxton & Co., 1856), pp. 294, and 306. While this discussion focuses specifically on root cellars under or within barns, they were just as frequently located within other outbuildings such as under carriage houses or various kinds of sheds. See for example, Note 106.

¹³⁵Long, *Pennsylvania Farm*, p. 345.

¹³⁶Shoppell, *How To Build*, n.p.

¹³⁷Morrell, *The American Shepherd*, p. 260. The large cellar under the carriage house on the Delano Farm in West Windsor contained 1400-1500 bushels (see Note 106).

¹³⁸Shoppell, *How To Build*, n.p.; Myers, p. 259.

¹³⁹Tucker, *The Cultivator*, Vol. 5, 371.

¹⁴⁰Shoppell, *How To Build*, Safford, "Farm Buildings," p. 344.

¹⁴¹E.C. Gardner, *Homes and How to Make Them* (Boston: James R. Osgood & Co., 1874), p. 228; Allen, *Rural Architecture*, pp. 54-56; and Helen Dodd, *The Healthful Farmhouse* (Boston: Whitcomb and Barrows, 1906), pp. 28-29.

¹⁴²Stephens, *Farmer's Guide*, p. 196; Canon et. al., *Manual of Home-Making*, pp. 584-585.

¹⁴⁴Lilian Baker Carlisle, ed., *Look Around Richmond, Bolton, and Huntington, Vermont* (Burlington: Chittenden County Historical Society, 1975), p. 47.

¹⁴⁵Hancock Historical Committee, *The Story of Hancock, Vermont, 1780-1964* (Hancock: Hancock Historical Committee, 1969), p. 64.

¹⁴⁶Marshal, p. 62; Dodd, *The Healthful Farmhouse*, pp. 28-29; Fessenden, *The New England Farmer*, Vol. 5, 342; William Drown, *Compendium of Agriculture, or The Farmer's Guide in the Most Essential Parts of Husbandry and Gardening* (Providence: Field & Maxcy, 1824), p. 260; D.H. Jacques, *The House: A Manual of Rural Architecture* . . . (N.Y.: George E. Woodward, 1860), p. 32; and Samuel D. Backus, William Backus, and Henry W. Cleveland, *Village and Farm Cottages* . . . (N.Y.: D. Appleton & Co., 1856), p. 89.

¹⁴⁷John Nicholson, *Farmer's Assistant*, p. 30; Samuel Deane, *The New England Farmer, or Geographical Dictionary* (Worcester, Mass.: Isaiah Thomas, 1797), p. 273; Butler, *Farmer's Manual*, p. 99; Fessenden, *The New England Farmer*, Vol. 2, 1826, pp. 209-210; Haisted, and C.W. Elliot, *Cottages and Cottage Life* (N.Y.: A.S. Barnes & Co., 1848), p. 219. The construction of dugout dwellings, as evident in the period of early settlement, was possibly ancestral to and in some cases contemporaneous with the hillside cellar. 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, 3 April 1978).

¹⁴⁸Haisted, *Barns, Sheds, and Outbuildings*, p. 224.

¹⁴⁹In 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.

¹⁵⁰Thompson, *History of the Town of Montpelier*, p. 47.

¹⁵¹Ernest L. Bogart, *Peacham, The Story of a Vermont Hill Town* (Montpelier: Vermont Historical Society, 1948), p. 59; George Fuller Webb, *Rockingham Historical Notes* (Bellows Falls: Bellows Falls Historical Society, 1969), p. 7. While log cabins were most often built without foundations, this was not always the case. See David C. Gale, *Proctor, The Story of a Marble Town* (Brattleboro: The Vermont Printing Co., 1922), p. 29.

¹⁵²Henry H. Vail, *Pomfret, Vermont* (Boston: Cockayne, 1930) p. 149.

¹⁵³Amos Eaton, *Green Mountain Whittlin's* (Burlington: Green Mountain Folklore Society, 1960), Vol. 3, p. 38.

¹⁵⁴Long, *Pennsylvania Farm*, pp. 158-162.

¹⁵⁵J. Hector St. John De Crevecoeur, *Sketches of 18th Century America* (New Haven: Yale University Press, 1925), p. 145, and Alfred Hopkins, *Modern Farm Buildings* (New York: Robert M. McBride & Co., 1920), pp. 200-203.

¹⁵⁶Long, *Pennsylvania Farm*, p. 156.

¹⁵⁷Telephone interview with Junior Harwood, Vermont Department of Forests and Parks, June and December 1978. These cellars are 12'-15' long. Both the hillside cellar and the artificially embanked form are represented at the Seven Islands site. Letter from Robert L. Bradley, Maine Historic Preservation Commission, May 10, 1978. See also David Sanger, "Cultural Resource Management in the Dickey-Lincoln School Reservoir, Maine." Report Prepared for the Corps of Engineers (Orono: University of Maine, 1977). Skavlem, *The Skavlem and Odegaarden Families*, pp. 26-27, mentions that by 1915 there was not the slightest trace of a 16' x 20' wood-lined temporary dugout home built in about 1840 due to the rapid decomposition of the wood.

¹⁵⁸Descriptive information and photographs of Icelandic outdoor cellars were provided by Gudrun Ellefsen Benner of Keflavik, Iceland, by way of Charlotte McCartney, Montpelier, Vermont in September, 1977. Description of a Michigan hillside cellar is found in an anonymous news story in *The Vermont Centennial* (Bennington), I, No. 14, July 17, 1877. Information about Kentucky root cellars was provided by Edward Chappell, Kentucky Heritage Commission, letter and drawings of March 21, 1978, and by Nathan Power, University of Vermont, telephone interview, December, 1978. Kentucky's hillside cellars are concentrated in the colder central and northern parts of the state, adjacent to Ohio, where one or two feet of snow cover the ground during a number of winter months. On the other hand, the construction of this kind of cellar in warm locales is not completely unlikely where its cooling properties would be valuable in the summer months. The influence of cultural architectural traditions is evident in Henry Glassie's study of Virginia *Folk Housing*, (p. 144-145). For example, the Pennsylvania Germans traditionally used distinctive architectural styles in hilly terrain and in flat country and maintained these two separate architectural traditions wherever they migrated. Native Virginians, on the other hand, whose architectural traditions reflected the flat terrain to which they were accustomed, did not have these separate building traditions. When they moved into upland country, they continued to build as if their land were flat.

¹⁵⁹Fessenden, *Complete Farmer*, pp. 43, 79, emphasized that stables should face to the east or "have an eastern aspect;" Jennings, p. 57, advised that piggeries should face south. Northern exposures

were desirable in the construction of ice houses (Fessenden, *Complete Farmer*, p. 79; Allen, *Rural Architecture*, p. 236; and Jacques, *The House*, p. 149) and Fessenden, *Complete Farmer*, p. 43, was emphatic that "the dairy house . . . should not front 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 Cyclopedia* (Philadelphia: W.H. Thompson, Pub., 1883), p. 690, 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., 1853), n.p.; Allen, *Rural Architecture*, pp. 258-263; and letter and unpublished data from John Worrell, Staff Archeologist, Old Sturbridge Village, March 30, 1978.

¹⁶⁰Documented root crop yields and number of livestock suggests 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.

¹⁶¹Byron E. Dix, "Possible Evidence of the Megalithic Yard at Calendar Site II, Vermont," *NEARA Journal* 1976, p. 27.

¹⁶²Fessenden, *The New England Farmer*, 1825, Vol. 3, 150.

¹⁶³Halsted, *Barns, Sheds, and Outbuildings*, p. 224.

¹⁶⁴Backus et. al., *Village and Farm Cottager*, 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."

¹⁶⁵Todd, *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, 1832), pp. 36-37.

¹⁶⁶Allen, *Rural Architecture*, p. 38; and Shaw, *Operative Masonry*, p. 37.

¹⁶⁷Jacques, *The House*, p. 159.

¹⁶⁸Barrows Mussey and Walter Needham, *A Book of Country Things* (Brattleboro: The Stephen Greene Press, 1965), pp. 56-57.

¹⁶⁹Todd, *The Young Farmer's Manual*, p. 148.

¹⁷⁰*Ibid.*, pp. 160-163.

¹⁷¹Bogart, *Peacham*, p. 245; Mary E. Gould, *The Early American House* (N.Y.: Medill McBride Co., 1949), p. 110; Himelhoch, *Early Plainfield*, p. 21; Newton, *Vermont Story*, p. 407; Frank R. Bent, *History of the Town of Essex* (Essex: Essex Publishing Co., 1963), p. 18.

¹⁷²Charles 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)."

¹⁷³Himelhoch, *Early Plainfield*, p. 21.

¹⁷⁴Herbert W. Congdon, *Old Vermont Houses* (Brattleboro: Stephen Daye Press, 1940), p. 106.

¹⁷⁵Todd, *The Young Farmer's Manual*, p. 145.

¹⁷⁶Essex, Grand Isle, Franklin, Caledonia, and Orange Counties have only partially been surveyed.

¹⁷⁷Chester Liebs, National Register of Historic Places Nomination Form, prepared in 1974, on file at the Division for Historic Preservation, Montpelier.

¹⁷⁸Victor Rolando, "Vermont's Iron Making Industry and Furnaces," Annual Meeting of the Vermont Archaeological Society, Burlington, October 14, 1978.

¹⁷⁹Corinth Historical Committee, *History of Corinth, Vermont* (West Topsham, Vermont: Town of

Corinth). pp. 207-208; Fortnightly Club, *The History of Putney, Vermont, 1753-1953* (Putney: The Fortnightly Club, 1953), p. 149; and Lyman S. Hayes, *History of the Town of Rockingham, Vermont . . .* (Bellows Falls: Town of Bellows Falls, 1907), p. 97.

¹⁸⁰See 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).

¹⁸¹Anne Ross, "Commentary," in Cook, *Ancient Vermont*, p. 88.

¹⁸²See Cook, *Ancient Vermont*, Fig. 4.

¹⁸³Personal interview with Dr. Charles Ratté, Vermont State Geologist, June 1977. See Cook, *Ancient Vermont*, Figs. 38 and 39; 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 Tarhish."

¹⁸⁴See Cook, *Ancient Vermont*, Figs. 7, 8, 10, 23, 42 and 49.

¹⁸⁵Henry M. Seely, "The Original Vermont Plow," in *Fourth Report of the Vermont Board of Agriculture for the Year 1877* (Montpelier: J. & J.M. Poland, 1877), p. 170.

¹⁸⁶Harry Jaffee, "Discovery of More 'Ancient Sites' Announced by Castleton Professor," *Rutland Herald*, June 3, 1977.

¹⁸⁷Report received from Professor Brewster Baldwin, Middlebury College, June 27, 1977; memorandum received from Dr. Charles Ratté, 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.

¹⁸⁸Cook, *Ancient Vermont*, Fig. 31 and Figs. 28-32 and 54-56; also Cook, "Discussion," *Ibid.*, p. 115.

¹⁸⁹*Ibid.*, Figs. 42-48, 50-60 and 62-64.

¹⁹⁰*Ibid.*, Fig. 9.

¹⁹¹See Byron E. Dix, "A Possible Plinth Monument in Central Vermont," *Occasional Publications of the Epigraphic Society*, 3, No. 60 (1976), 1-6; and Cook, *Ancient Vermont*, Fig. 69; and Fell, *America*, pp. 71-72.