EVOLUTION OF SETTLEMENT IN ORANGE COUNTY, VERMONT, 1760 TO 1960

A Thesis

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Martha Lee Tuthill Andrews, A. B.

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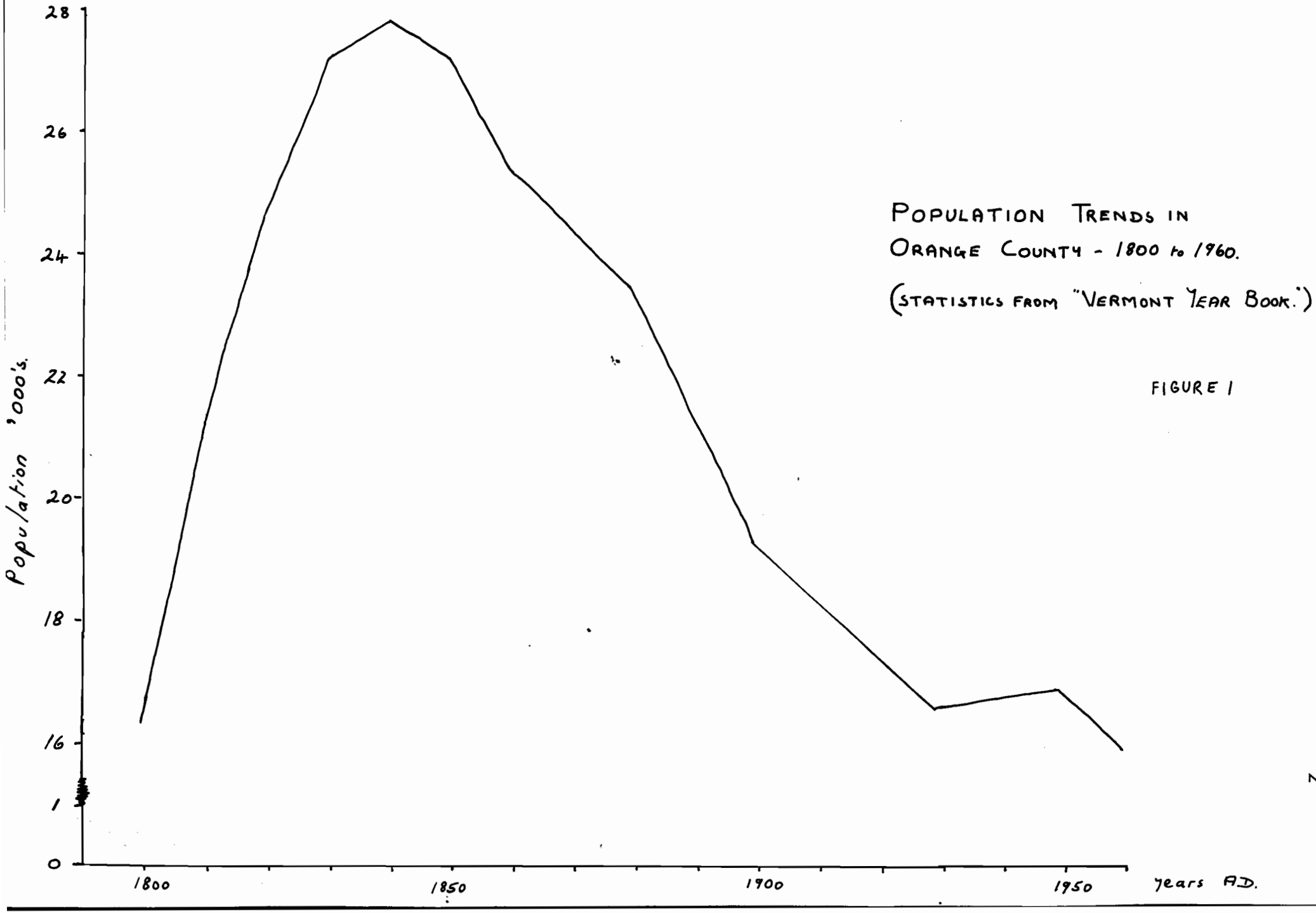
Chapter I

INTRODUCTION

This thesis presents an analysis of pioneer settlement and subsequent rural depopulation and land abandonment during the past 200 years in an unrewarding area of northern New England.

Orange County was first settled in 1762; population reached its maximum in 1840 and then declined steadily until the 1930's (see Figure 1). This county, encompassing seventeen towns in east central Vermont, was selected as an example of a small area with economic problems representative of the problems of rural northern New England (the states of Vermont, New Hampshire, and Maine). The county unit, as the only source of adequate and continuous statistical information, determines the areal setting of this study; it is not claimed to be a geographical region. The purpose of the study was to investigate the impact on a small, marginal area of such external influences as the industrialization of southern New England, and the opening up of lands to the west suitable for the rising practice of commercial agriculture, in the nineteenth century. Therefore this is primarily a contribution to the documentation of frontier settlement in the United States.

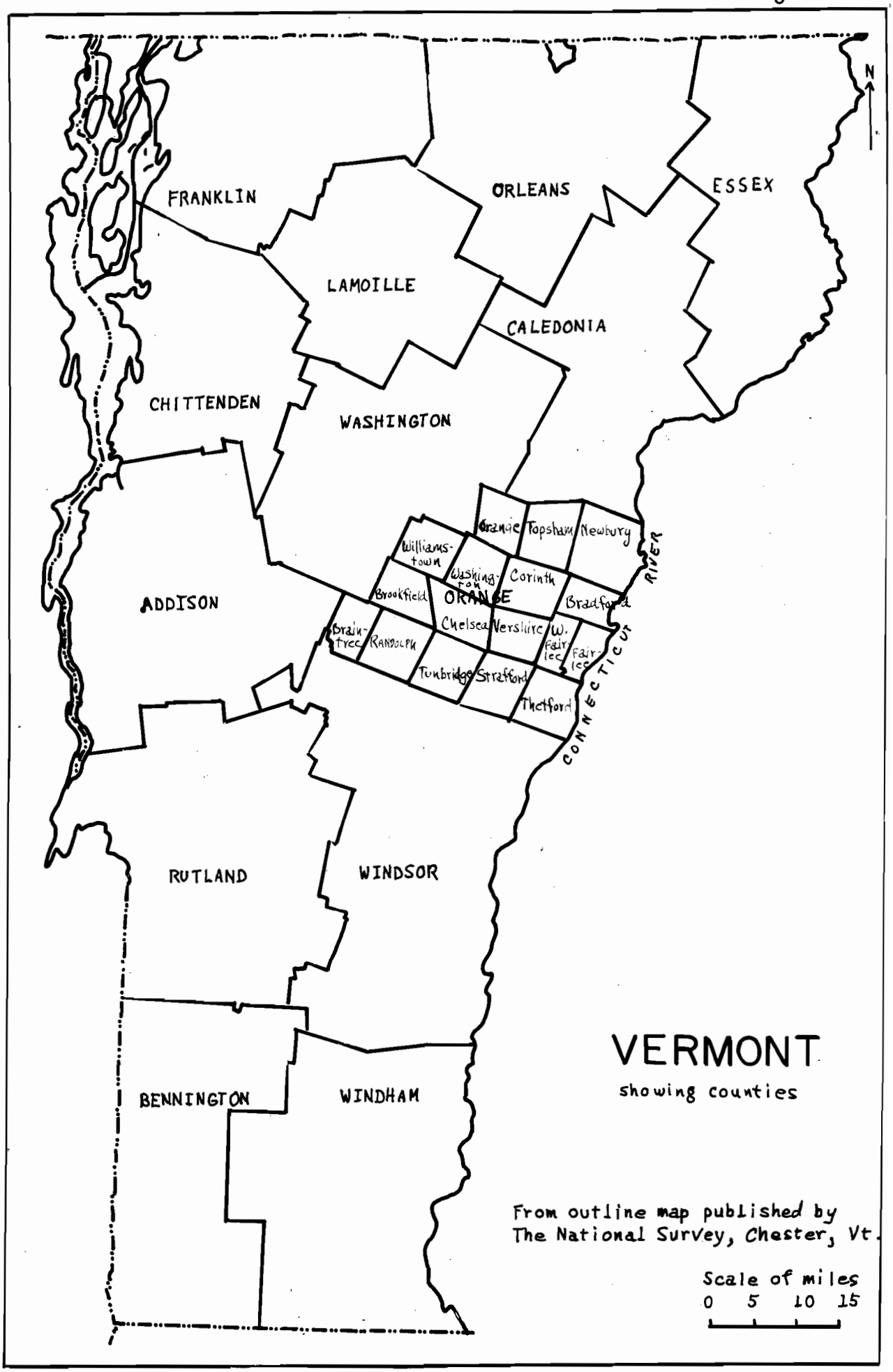
Orange County comprises seventeen towns between the Green Mountains and the Connecticut River (see Map 1). Its topography varies from steep-sided,



POPULATION TRENDS IN ORANGE COUNTY - 1800 to 1960.

(STATISTICS FROM "VERMONT YEAR BOOK.")

FIGURE 1


N
FRANKLIN
ORLEANS
ESSEX
LAMOILLE
CALEDONIA
CHITTENDEN
WASHINGTON
Granite
Topsham
Newbury
Williams-town
Washing-ton
Corinth
Brookfield
ORANGE
Bradford
ADDISON
Brain-tree
Randolph
Chelsea
Vershire
W. Fair-lee
Fair-lee
Tunbridge
Strafford
Thetford
CONNECTICUT RIVER
RUTLAND
WINDSOR
BENNINGTON
WINDHAM
VERMONT
showing counties
From outline map published by
The National Survey, Chester, Vt.
Scale of miles
0 5 10 15

MAP 1

narrow, gulfs running north-south parallel to the Green Mountains on the west, to the gently rolling hills sloping down to the plain along the Connecticut River on the east. The eastern half of the county was originally covered by white pine and the western half by spruce, with mixed hardwoods in the north.[1] The climate today has an annual average temperature of 42°F. with summer and winter means of 64°F. and 18°F. respectively.[2] Total precipitation ranges from 34 to 40 inches,[3] including a snowfall of 80 to 100 inches.[4] The growing season lasts 100 to 120 days.[5] (See Chapter III for climatic maps and details.) Climatic conditions were probably similar two centuries ago.

The present land use and vegetation pattern of Orange County (see Fold Map 2, in pocket), provide living testimony to the changes in settlement and land use over the past 200 years. At present, fifty-eight per cent of the county is still in farms, with the land being used for pasture, hay, corn, and feed grains, witness to the county's dependence on agriculture in the form of the dairy industry which provides fluid milk for the Boston market. The remainder of the county is woodland, original forest in areas never settled, and various stages of second growth forest on lands abandoned in the last 120 years. The large percentage of woodland reflects the county's dependence on small wood

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[1] John K. Wright (ed.), "New England's Prospect: 1933", American Geographical Society, Special Publications, 16 (1933), p. 215.

[2] John D. Black, The Rural Economy of New England, (Cambridge, Mass., 1950), p. 36.

[3] Ibid., p. 40. [4] Ibid., p. 43. [5] Ibid., p. 38.

products industries for its greatest manufacturing employment. The natural beauties of the county, so apparent to the traveler, are now bringing profit to the residents; the Connecticut River valley attracts many tourists, especially to Lake Morey, and the retail trade along major traffic routes receives needed stimulation. Thus, on the basis of dairying, small manufacturing based mainly on wood products, and the tourist and retail trade businesses, Orange County seems at present able to support a population of approximately 16,000.

The present demographic and economic structure of the county has evolved over 200 years. From the early seventeenth century, a series of international disagreements had confined English settlement to the Atlantic coast of North America, but with the establishment of the English monopoly in North America after 1760, movement inland was stimulated. The presence of New York, where large blocks of land had been engrossed under a manorial land system, obstructed westward movement. For this reason, the main stream of immigration was northward, until, with the Revolution, the New York land system was modified. Thus Orange County, a marginal agricultural area, was settled because there was no immediate alternative for emigrants from overpopulated southern New England.

Population increased by natural growth and through immigration until 1840 when it reached 27,873 (see Figure 1, page 2), supported by an economy of largely self-sufficient farming with some trade in surplus or specialized agri-

cultural products, and some small manufacturing, mainly for local needs. Between 1840 and 1880 the county's population declined to 23,525 as the least desirable lands were abandoned. The opening up of new, superior agricultural lands in the western United States, which were more suitable to large scale commercial agriculture, and growing labor demands of the rapidly industrializing cities of southern New England, drew emigrants by the thousand from Orange County, which was ill-suited topographically for commercial agriculture and also isolated from the major transportation routes of the northeastern United States manufacturing belt.

During the fifty years after 1880, the decline in population continued so that by 1930 it was 16,694 (see Figure 1, page 2). Fluctuations in the downward trend of population reflected the prosperity of the copper mining industry; the agricultural population declined steadily. The only compensating agricultural development was the growth of the dairy industry during these years, which was to provide a permanent economic base and demographic stability from the 1930's to the present.

Changes in the settlement pattern have occurred within a predominantly agricultural population. During the years of peak population (1830 to 1850), the dominant unit of occupation was the compact farm and consequently the pattern of settlement was dispersed. The present settlement pattern, evolved over the past 100 years, retains dispersed rural settlement characteristics, but also reveals

concentrations of settlement which represent market, service, transportation, and small industrial centers.

Previous Studies Concerned With The Thesis Problem

Previous investigations of the problems considered in this thesis have been concerned with New England as a whole, northern New England, or Vermont. Moreover, these studies have been conducted from a social or economic view point; no geographical study on Orange County has been published. John D. Black, an agricultural economist, in his Rural Economy of New England (Cambridge, Harvard University Press, 1950), presented an important systematic regional analysis concentrating on agriculture, forestry, and recreation. While his emphasis is on the present, trends from 1880 and sometimes earlier are discussed. Harold F. Wilson's book, The Hill Country of Northern New England (New York: Morningside Heights, Columbia University Press, 1936), presents a social and economic history of Maine, New Hampshire, and Vermont from 1790 to 1930, and covers many of the problems of economic life and emigration discussed in this thesis. Two works on Vermont deal in sufficient detail with the specific problems of early settlement and later emigration: Genieve Lamson, in "Geographic Influences In The Early History Of Vermont", Collections of the Vermont Historical Society, 5, (Essays in the Social and Economic History of Vermont, 1943), p. 75-138, discusses the reasons for site choice among the

original settlers; Lewis D. Stilwell, in Migration From Vermont (Montpelier, Vermont Historical Society, 1948), discusses fully the mass emigration of Vermonters and covers for the state some of the problems encountered in Orange County.

None of these studies are primarily concerned with the occupation and settlement of rural New England and it is in the geographical concern with these spatial aspects of economic and social change that this study can be regarded as a distinctly geographical contribution to frontier settlement.

Organization Of The Thesis

The thesis is organized into material providing the background to the research, and the material based on the research. The broad historical background necessary to visualize Orange County in the context of settlement on the English frontier in the New World, is provided in Chapter II. Chapter III summarizes the physiography, climate, soils and vegetation of Orange County and the surrounding area of New England in an attempt to establish the marginality of the area for continuously productive agriculture. The earliest years of settlement in Orange County, including the background and influence of the proprietary land grant system, and the source and motivations of the immigrants are discussed in Chapter IV; documentary evidence is least abundant for this period. Chapter V deals with the prime years of agriculture and population in the county; decline had set in by 1850. Chapters VI and VII attempt to record and analyze the depopulation of

Orange County from 1840 to 1930, in terms of comparative marginality of the county for either agriculture or industry. Chapter VIII discusses the economically and demographically stable period, which began in the 1930's and continues at present. Conclusions based on the research findings are contained in Chapter IX. A section on "Cartographic Sources" follows the Bibliography.

Sources

The sources of data for this study are mainly, of necessity, materials available in written or map form; also aerial photographs were found to be invaluable aids. Information was found primarily in the Middlebury College Library, Middlebury, Vermont, (including the excellent Abernethy Collection); the Wilbur Room of Fleming Museum at the University of Vermont, Burlington, Vermont, (now the Wilbur Collection, Bailey Library, University of Vermont); the library of the Vermont Historical Society, Montpelier, Vermont; and the State Library in Montpelier. Research was carried out in these libraries in the summer of 1961. Basic information was obtained from U.S. Census reports, the Vermont Year Book, numerous local town histories, several gazetteers, periodical publications, and general works on the history, geography, and economy of New England and Vermont, including Orange County. Several field trips were made through the county in 1961 and 1962 to check topographical information obtained

from maps and aerial photographs and to observe the settlements as they are today, together with the evidence of a different yesterday manifest in the landscape of second growth forest, deserted pasture land, and abandoned buildings.

Chapter II

HISTORICAL BACKGROUND LEADING TO THE CREATION OF ORANGE COUNTY

Orange County and the rest of Vermont were beyond the area settled in the first wave of European immigration to the Atlantic seaboard of North America; they were settled later as part of a great wave of "re-emigration" during which the colonies on the coast expanded to the interior following the establishment of English control over North America in 1760.

The English Colonies in North America

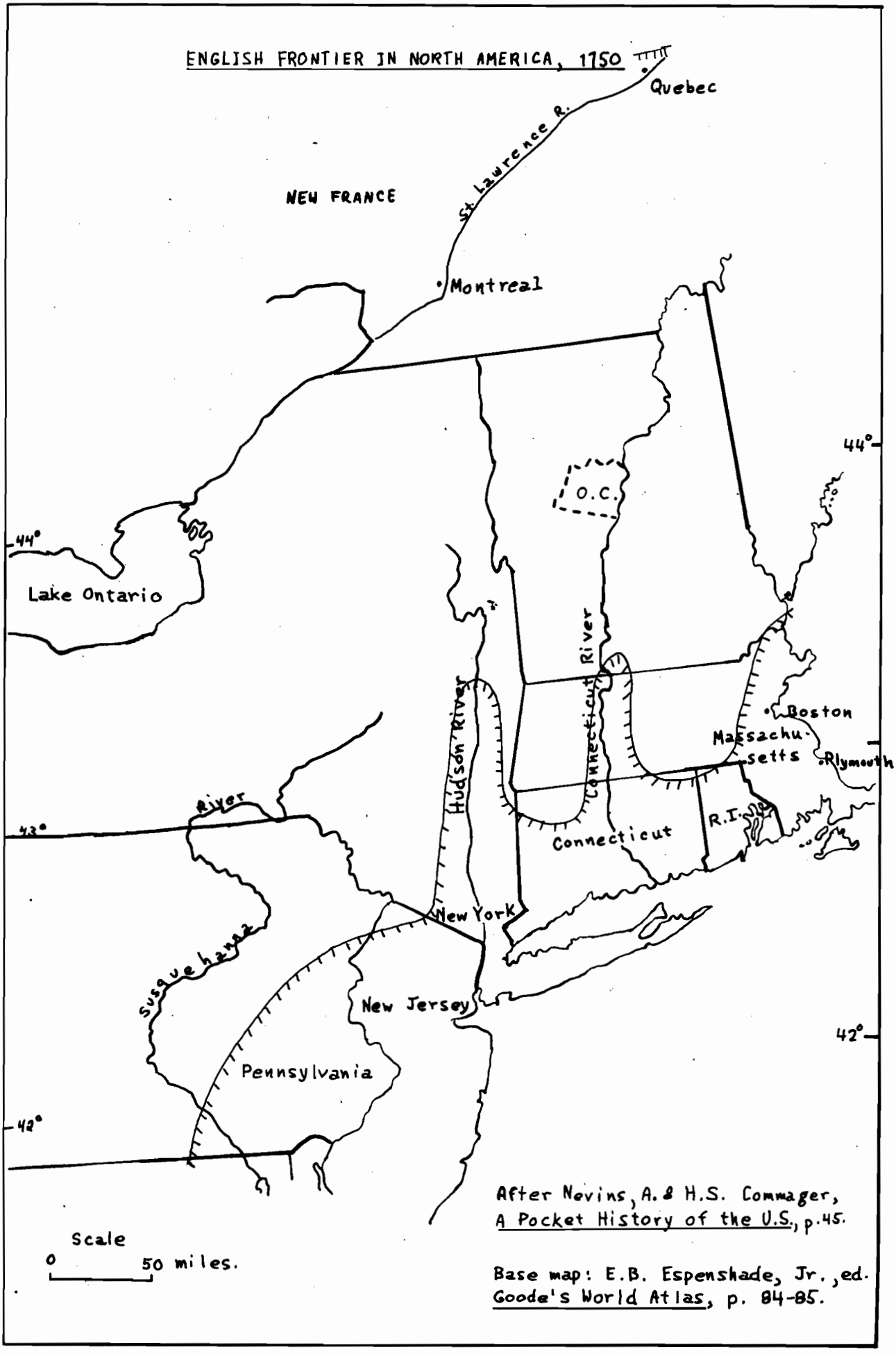
In the seventeenth century, England and several European countries expanded their horizons and moved abroad to establish settlement frontiers in North America and other parts of the New World. It is primarily the expansion of the English frontier in North America which provides the background to the study of settlement in Orange County.

English settlement in North America began in 1607 with the arrival of a group of British settlers in what later became the state of Virginia. In 1620 settlement was begun in New England by English Calvinists, who had left England for religious as well as other reasons; they did not believe in the right of the King to be head of the Church of England. They landed from their ship "Mayflower" on the coast at a place they called Plymouth, later to

be included in the state of Massachusetts (see Map 2). Other colonists from England followed, mainly Puritans who had broken away from the Church of England. They founded many towns in Massachusetts, including Boston. During the seventeenth century the thirteen colonies which formed the first United States of America were established along the Atlantic seaboard from Maine to Georgia.

The first two English colonies, Virginia and Massachusetts, were established by profit seeking chartered trading companies which had the right to distribute land, operate mines, coin money, and organize the defense of the colonies. Their charters were granted by the King, who retained ultimate authority while allowing the companies considerable power. The companies were a financial failure, but The London Company managed to establish Virginia before it went bankrupt and The Plymouth Company "planted" many towns in Maine, New Hampshire, and Massachusetts before it met a similar fate. In spite of these failures, The Massachusetts Bay Company was granted a charter in 1629. The principal Puritan membersof the company purchased all of the stock and established a self-governing colony in Massachusetts. They were thus in a position to persecute dissenters from Puritanism within the company's territory. The main Puritan emigration to Massachusetts took place between 1628 and 1640, declining after the start of the English Civil War in 1642; about this time the Cavalier emigration to Virginia began.

The main method of colonizing the unsettled lands of New England


ENGLISH FRONTIER IN NORTH AMERICA, 1750
Quebec
St. Lawrence R.
NEW FRANCE
Montreal
44°
O.C.
44°
Lake Ontario
Hudson River
Connecticut River
Boston
Massachu-
setts
Plymouth
River
42°
R.I.
Connecticut
New York
Susquehanna
New Jersey
42°
Pennsylvania
42°
Scale
0
50 miles.
After Nevins, A. & H.S. Commager, A Pocket History of the U.S., p.45.
Base map: E.B. Espenshade, Jr., ed. Goode's World Atlas, p. 84-85.

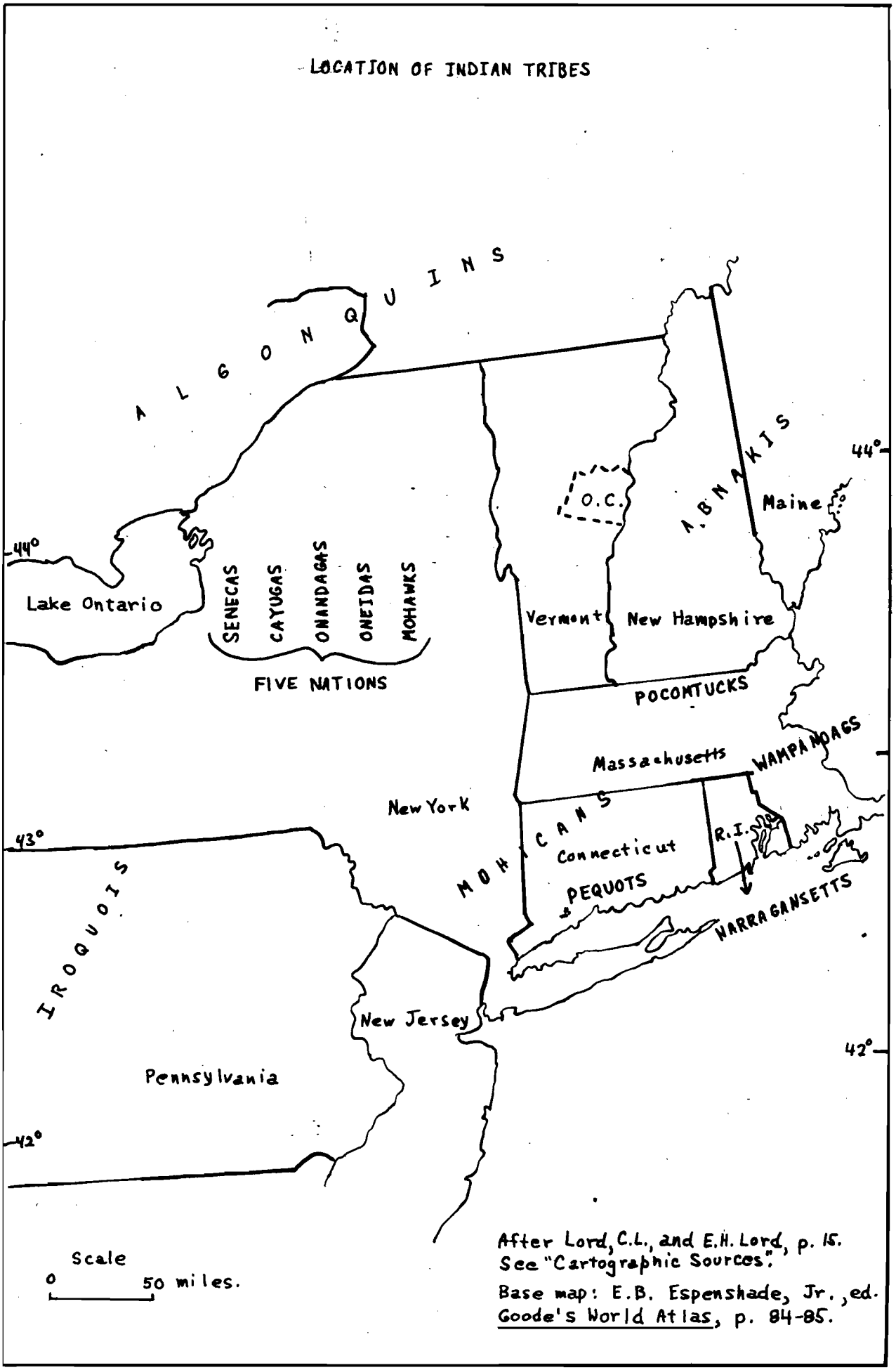
MAP 2

was through the proprietary grant system (discussed fully in Chapter IV).

From the Massachusetts Bay Colony, settlers moved out to colonize the rest of New England. Early dissenters migrated to Rhode Island and Connecticut to escape the Puritan theocracy in Massachusetts; others scattered to Maine and New Hampshire. These people were a homogeneous group of nearly pure Anglo-Saxon origins, who, in harsh and unfamiliar surroundings, developed the typical "Yankee" characteristics of hard work, thrift, and independence. The New England Yankee colonists' households were largely self-sustaining, but a large export trade with England and the West Indies was also developed with Boston the main port and focus of New England commercial life.

The settlers who had moved from Massachusetts to Connecticut and New Hampshire were content to remain in these colonies only as long as they were not overcrowded, allowed personal freedom, and afforded protection from Indians through close settlement. However, many were prepared to move farther away as soon as safety allowed.

The territory now within the borders of Vermont had not been continuously settled prior to white immigration: it lay between the Algonquin Indian tribes of Canada and the Iroquois of New York state (see Map 3). Both groups used Vermont as a hunting ground, and also as a warpath during their frequent raids on each other. With the coming of English colonists to southern New England, Vermont also became the thoroughfare for Canadian Indians and their


LOCATION OF INDIAN TRIBES
ALGONQUINS
ABNAKIS
44°
O.C.
Maine
44°
Lake Ontario
SENECAS
CAYUGAS
ONANDAGAS
ONEIDAS
MOHAWKS
FIVE NATIONS
Vermont
New Hampshire
POCOMTUCKS
Massachusetts
WAMPANOAGS
New York
MOHICANS
43°
Connecticut
R.I.
PEQUOTS
NARRAGANSETTS
IROQUOIS
New Jersey
Pennsylvania
42°
42°
Scale
0
50 miles.
After Lord, C.L., and E.H. Lord, p. 15.
See "Cartographic Sources".
Base map: E.B. Espenshade, Jr., ed.
Goode's World Atlas, p. 84-85.

MAP 3

French allies raiding the new settlements.

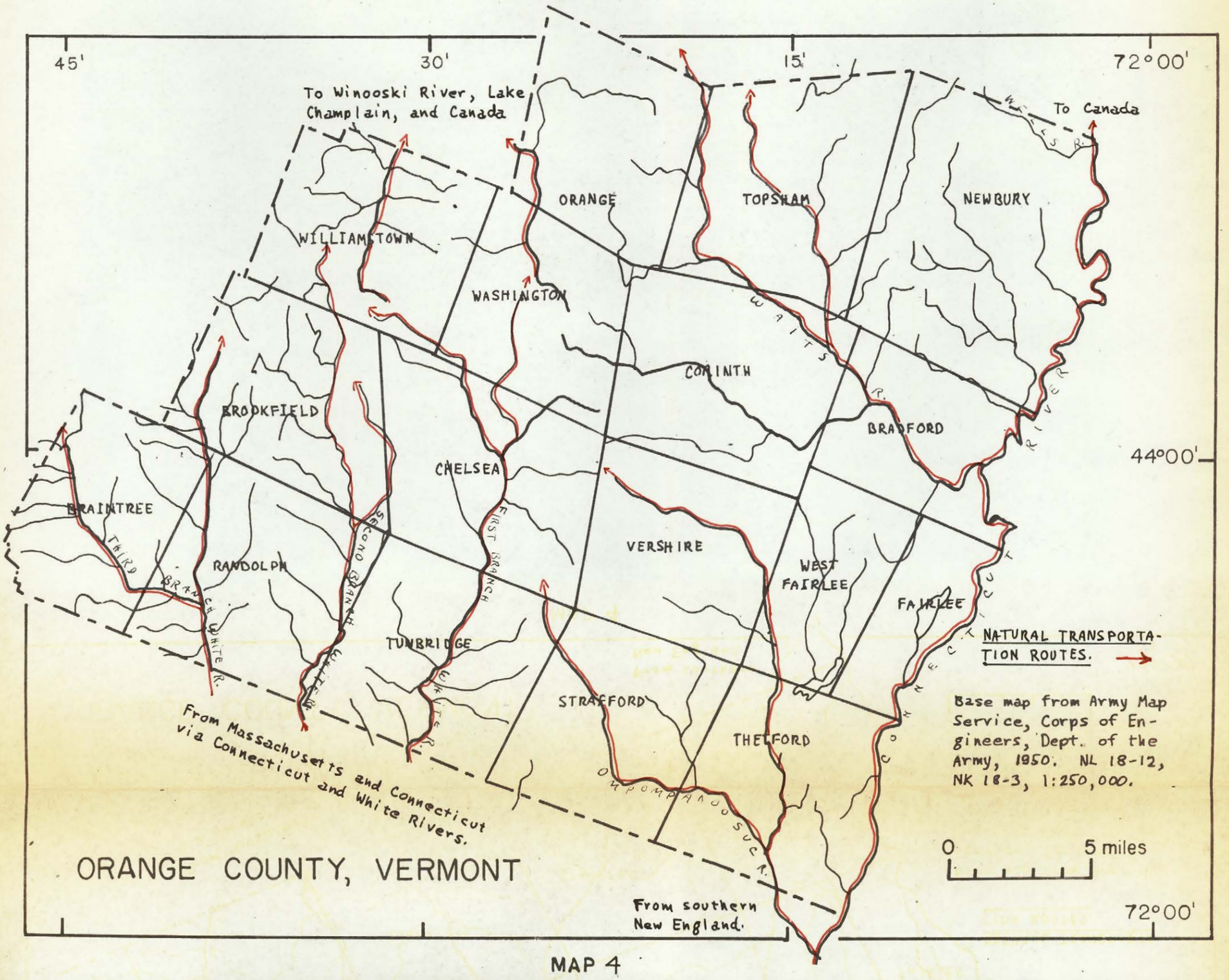
English-French Dispute Over Territory Now Vermont

Between 1690 and 1760 the conflicts between Britain and France in Europe were reflected in their colonial outposts. During these years, the French settlers of New France, along the St. Lawrence River (see Map 2, page 13) were several times in conflict with the English settlers of southern New England; both sides enlisted Indian support. Orange County lay on the travel routes of these hostile groups as the Connecticut valley provided a natural water route between Massachusetts and Canada, with comparatively easy trails along its banks. The White and Wells Rivers, both tributary to the Connecticut River and lying partly in Orange County, were the main water and trail routes toward the north (see Map 4). From these rivers, using short portages, one could travel west to Lake Champlain along the route of the Winooski River, north on Lake Champlain to the Richelieu River, and downstream to the St. Lawrence River and Montreal.

Although most of the territory which later became Vermont was not yet safe for settlement, Massachusetts had already claimed part of its southeastern corner and there in 1724 built Fort Dummer near the present town of Brattleboro. This fort, together with a few forts on the east bank of the Connecticut River in New Hampshire, gave Massachusetts settlers some protection from Indian attacks.[1]

---

[1] Earle W. Newton, The Vermont Story, (Montpelier, 1949), p. 32.



ORANGE COUNTY, VERMONT

MAP 4

In 1744, the war known in New England as the First French and Indian War, began between England and France in North America, and by 1749 the few English settlers in southern Vermont were driven out, although the English retained Fort Dummer. The Second French and Indian War followed in 1756. By 1759, when the English Army under General James Wolfe captured Quebec City, the French were defeated and ceded most of their North American possessions to England. English rule in Quebec greatly decreased the Indian danger to New England.

In 1762 Vermont appeared to be a safe and attractive area for settlement, especially along the meadows bordering the Connecticut River, and in this year a group of settlers from Newbury, Massachusetts reached Orange County, calling their township, located at the junction of the Wells and Connecticut Rivers, Newbury.

The New Hampshire - New York Dispute Over The Territory Now Vermont

While Vermont was still a battleground during the French and Indian Wars, a further disagreement arose over title to the area. Benning Wentworth had become governor of the colony of New Hampshire in 1741, when the colony of Massachusetts extended westward to about twenty miles east of the Hudson River. The Massachusetts colony was the southern boundary of New Hampshire, so Wentworth reasoned that New Hampshire should also extend west to within twenty miles of the Hudson River. Consequently in 1749 he

granted a township (Bennington) west of the Connecticut River, extending to this limit.[2] Other grants by New Hampshire west of the Connecticut followed until 1764 when King George III of England authorized addition of the territory west of the Connecticut River to the colony of New York, and declared New Hampshire's western boundary to be the west bank of the Connecticut River.[3] This decision became the basis for a dispute over the area between the west bank of the Connecticut River and a line twenty miles east of the Hudson; this area eventually became Vermont (see Map 5). The settlers in the New Hampshire grants west of the Connecticut River were unaware that their territory had been annexed to New York until 138 towns had been granted (including Corinth, Fairlee, Newbury, Strafford, Thetford, Topsham, and Tunbridge in Orange County, see Map 1, page 3). Settlers in the disputed area refused a demand by New York officials that they seek new grants for the lands already granted to them by New Hampshire; thus in 1765 New York declared all New Hampshire grants west of the Connecticut River invalid, and prepared to make separate and conflicting grants.[4] In Orange County, New York granted Moorestown (later Bradford) and Middlesex (later

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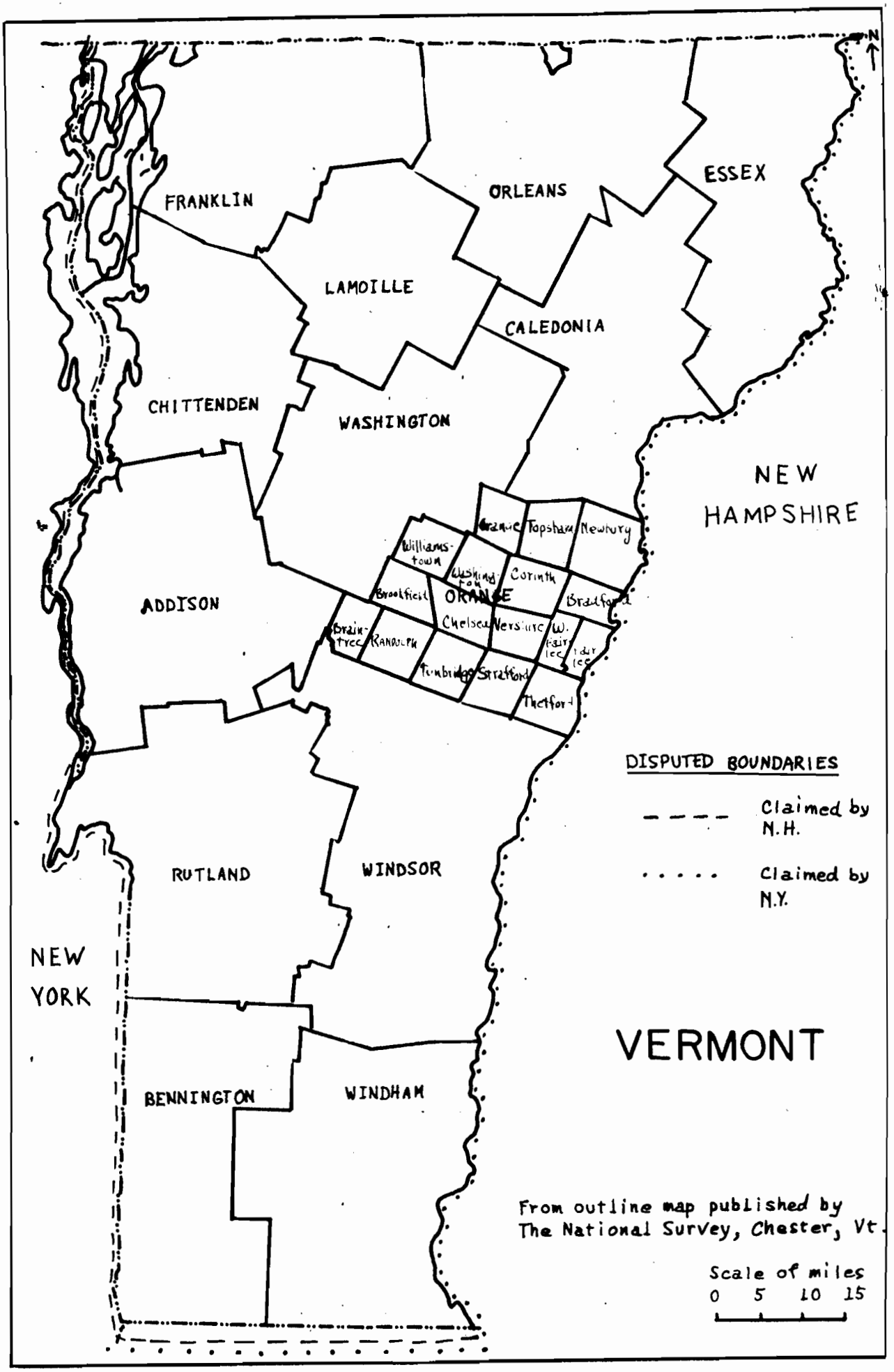
[2]F. P. Wells, History of Newbury, Vermont, (St. Johnsbury, 1902, p. 52.

[3]Ibid., p. 53.

[4]Ibid.


N
FRANKLIN
ORLEANS
ESSEX
LAMOILLE
CALEDONIA
CHITTENDEN
WASHINGTON
NEW HAMPSHIRE
Orange
Topsham
Newbury
Williamstown
Washington
Corinth
Bradford
Brookfield
ORANGE
ADDISON
Braintree
Randolph
Chelsea
Vershire
W. Fairlee
Fairlee
Tunbridge
Strafford
Thetford
DISPUTED BOUNDARIES
Claimed by N.H.
Claimed by N.Y.
RUTLAND
WINDSOR
NEW YORK
VERMONT
BENNINGTON
WINDHAM
From outline map published by The National Survey, Chester, Vt.
Scale of miles
0 5 10 15

MAP 5

Randolph), and confirmed the grants of Corinth, Newbury, and Topsham.[5] Bennington was the principal settlement in the disputed area; a string of settlement stretched directly north to what is now Danby. By 1767 King George III had forbidden further New York grants in the disputed territory, but New York disregarded this order, and established Gloucester County by an ordinance of the Council of March 6, 1770.[6] It was bounded on the south by Cumberland County, a line which nearly coincided with the present southern boundary of Orange County. The eastern boundary was the Connecticut River, the northern boundary the international boundary with Canada, and the western boundary was a north-northeast line from Royalton to the Canadian line (see Map 6). Kingsland was made the shire town, although it was at the time a tract of uninhabitable woodland, eight miles from any settlement, which later became the town of Washington. Since New York courts still refused to recognize the legality of the New Hampshire grants, representatives from several of the grants met at Bennington and pledged themselves to use force if necessary to resist the New York claims which they felt to be unjust.[7] Bennington was a well established little town containing a militia which formed

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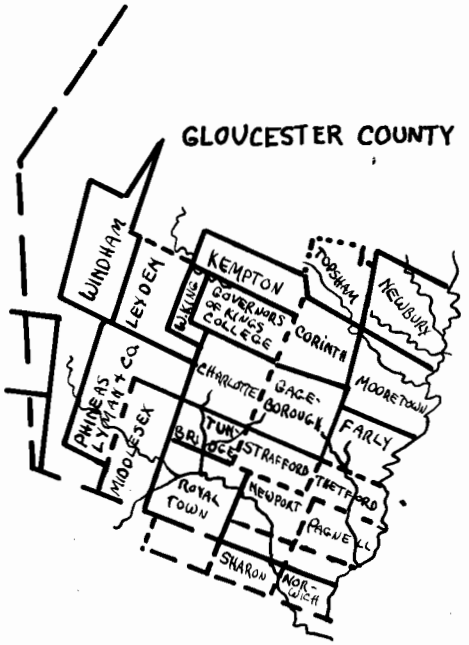
[5] Index to the Papers of the Surveyors-General. (Vol. I of the State Papers of Vermont. Rutland, 1918), towns arranged alphabetically on several pages.

[6] "Gloucester County Court Records, 1770-1744", Collections of the Vermont Historical Society, 4 (The Upper Connecticut, Vol. II, 1943), p. 145-160.

[7] Newton, op. cit., (Montpelier, 1949), p. 46.

MAP OF THE PROVINCE OF NEW YORK, 1779.



Area of map approximates present Orange County. From E.W. Newton, The Vermont Story, p. 54. Copied by David Vaughan in 1849 from a map by Claude Joseph Sautier, 1779. Illustrates New York grants in Orange County, then part of Gloucester County.

MAP 6

a nucleus for the larger militant organization calling itself "The Green Mountain Boys"; in 1770 this body exerted control west of the Green Mountains, and New York never again had effective control over the area. However, the dispute was interrupted by the Revolutionary War, and final settlement was not made until 1790. Vermont paid New York $ 30,000 for the release of claims under its grants.[8]

The Revolutionary War And Other Events Leading To An Independent State Of Vermont

After the Treaty of Paris in 1763, Britain felt obliged to tighten control over its territory in North America. However, the colonists, now rid of French and Spanish dangers to the north and south, felt a decreasing need of British protection, and a series of tense situations between England and the American colonies eventually sparked the great conflict of the American Revolution. By 1774, active resistance to British rule was evident in all of the colonies, although it advanced more slowly in New York.[9] Political discussions led to the Declaration of Independence, but even before this document was signed in 1776 fighting had begun; a regiment of recruits from Massachusetts, Connecticut, and Vermont, led by Ethan Allen, captured the British fort at Ticonderoga, New

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[8]Lawton V. Crocker, "A Summary of Events Leading to the Formation of the State", Historical Souvenir of Vermont, (Chester, Vt., 1941), p. 31.

[9]Ibid., p. 20.

York, which guarded the southern entrance to Lake Champlain. Although Vermont was not a state in the newly formed Union, her men fought on the side of the colonists during the Revolutionary War. Forts were maintained at several places in Vermont, including Newbury and Corinth in Orange County, but little fighting took place on Vermont soil. In 1781, the Revolutionary War ended successfully for the colonists when the British General Charles Cornwallis surrendered to General George Washington at Yorktown, Virginia.

Meanwhile, in 1776, the first of a series of conventions leading to the eventual independence of Vermont was held at Dorset, Vermont. The fourth of these conventions voted to request that the New Hampshire grants be formed into a separate district. (They also voted to build a jail in which to confine Tories!)[10] On January 15, 1777, the sixth convention, held in the town of Westminster, declared Vermont an independent state named New Connecticut, and the seventh convention, held on June 7 in the town of Windsor reaffirmed this declaration and changed the name to Vermont.[11] Finally, on December 24, the ninth convention at Windsor provided for the first election and the first meeting of the legislature. It is interesting to note that Vermont was the first state to prohibit slavery and to grant universal male suffrage in its Constitution.[12]

At the first session of the General Assembly of Vermont, on March 17, 1778, the state was divided into two counties: the territory lying on the west side of the Green Mountains was called Bennington County, and that on the

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[10] Ibid., p. 22. [11] Ibid., p. 23. [12] Newton, op.cit., (1949), p. 76.

east side Unity County (changed to Cumberland County four days later); the boundary between them was settled by an act of the legislature passed on February 11, 1779 (see Map 7). Later, by an act of the General Assembly of Vermont passed in February 1781, the county of Cumberland was divided into the three counties of Windham, Windsor, and Orange. Orange County then included all territory north of Norwich, Sharon, Royalton and Bethel to the Quebec line. This area was divided into Orange, Essex, and Caledonia Counties and a portion of Orleans County in 1792.[13] Shire town of Orange County was Newbury at the time, but the county seat was transferred to Chelsea in 1796 and so remains.

Entry Of Vermont Into The Union As The Fourteenth State

After the Revolutionary War Vermont was approached by Britain about forming a loose union with Canada under the British flag. The United States Congress faced a dilemma: Vermont had remained loyal to the cause of the former colonies, but by negotiating with Britain pressured the new nation for statehood. Congress, in turn, did not want to raise difficulties with New York, New Hampshire, and Massachusetts, who all claimed parts of Vermont territory.[14] After years of disputation among the various claimants, Vermont

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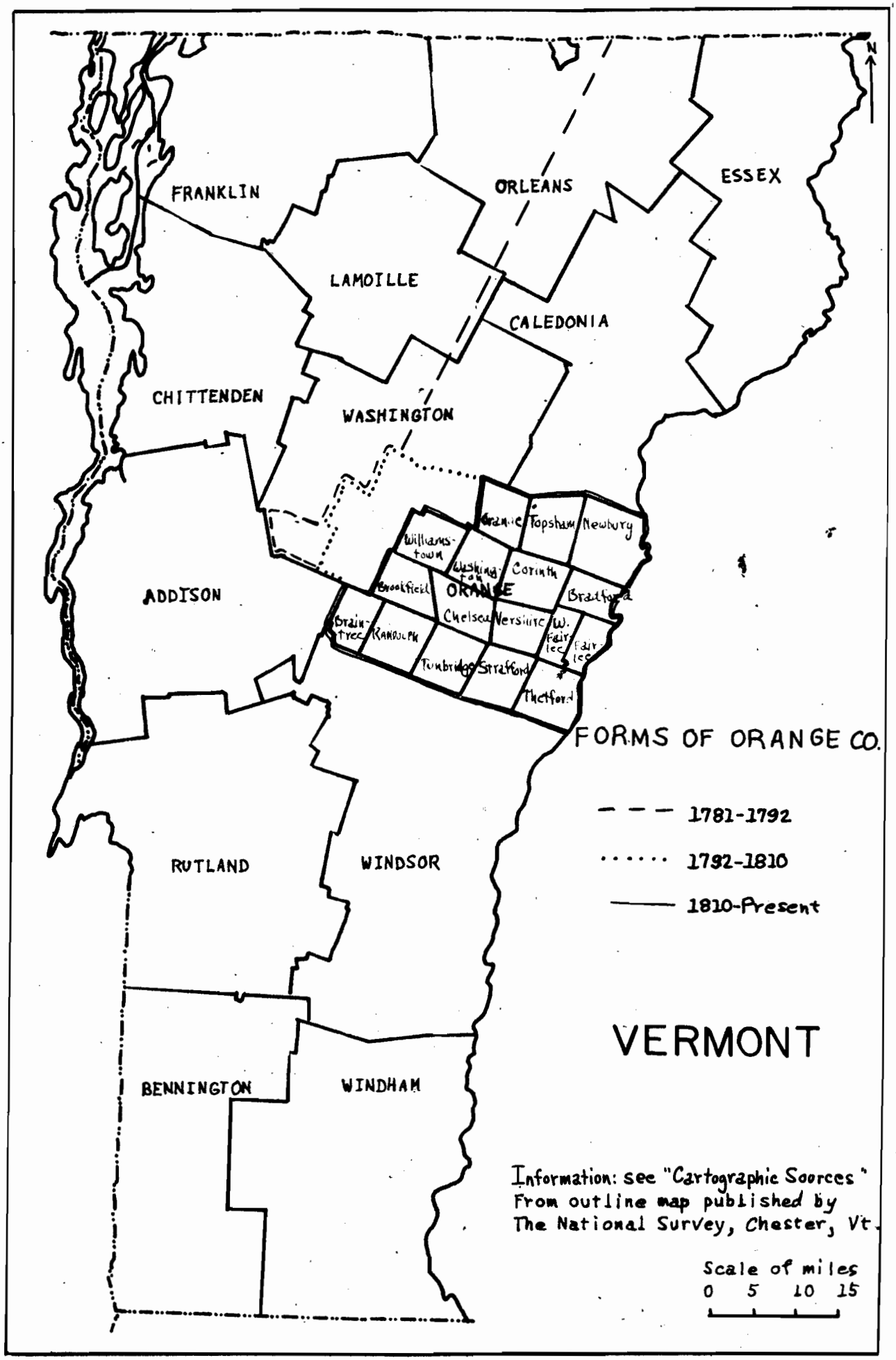
[13]Hiland Hall, "New York Land Grants in Vermont, 1765-1776", Collections of the Vermont Historical Society, I (1870), p. 145-160.

[14]Crocker, op. cit., (1941), p. 28.


N
FRANKLIN
ORLEANS
ESSEX
LAMOILLE
CALEDONIA
CHITTENDEN
WASHINGTON
ADDISON
Williamstown
Washington
Corinth
Topsham
Newbury
Brookfield
ORANGE
Bradford
Braintree
Randolph
Chelsea
Vershire
W. Fairlee
Fairlee
Tunbridge
Strafford
Thetford
FORMS OF ORANGE CO.
1781-1792
1792-1810
1810-Present
RUTLAND
WINDSOR
BENNINGTON
WINDHAM
VERMONT
Information: see "Cartographic Sources"
From outline map published by
The National Survey, Chester, Vt.
Scale of miles
0 5 10 15

MAP 7

was finally admitted as the fourteenth state of the Union in 1791. The accepted borders were essentially those earlier established: the western bank of the Connecticut River on the east; a line twenty miles east of the Hudson River, then north through Lake Champlain on the west; the international boundary on the north; and Massachusetts on the south. In 1810 when Jefferson County (changed to Washington County in 1814) was formed, the towns of Barre, Berlin, Northfield and Roxbury were taken from Orange County and included in it, and Orange County assumed its present boundaries.[15]

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[15]Hamilton Child, Gazetteer of Orange County, Vermont, 1762-1888, (Syracuse, 1888), p. 9.

Chapter III

PHYSICAL ASPECTS OF ORANGE COUNTY AND THEIR INFLUENCE ON EARLY SETTLEMENT

In the early days of pioneer penetration into New England, the physical environment had a greater influence than in later years when man had made further progress toward conquering nature. Since no transportation routes had been imposed on the wilderness, the routes by which the settlers arrived in Orange County were largely determined by the drainage pattern. Settlement sites were often chosen with regard to the proximity of river transportation; at other times people settled the upland areas of hardwood forest and scant underbrush for ease of clearing and planting. Waterfalls became mill sites around which many of the villages later grew up. Although the various soil types were not recognized by early settlers, obvious rough and stony areas were not settled. Therefore it seems relevant to summarize the physiography, climate, and soils of Orange County and the surrounding areas of Vermont and New England in enough detail to visualize the physical setting and its influence on settlement.

I. TERRAIN

The Physiography Of Vermont And The Rest Of New England[1]

The present surface of New England is a dissected peneplain sloping seaward with residual mountains in groups and ranges. The New England area is divisible into several physiographic provinces (see Map 8), most of which are represented in the varied landscape of Vermont.

The combined factors of bedrock, geological tectonics, erosion throughout the Tertiary period, Pleistocene glacial erosion and deposition, and finally post-glacial modification have formed a series of broad physiographic regions in Vermont (see Map 8). These regions are delimited on the basis of broad similarities occurring within any one region, and are thus important in a discussion of the settlement geography of Vermont.

The Seaboard Lowland section. This section, the only major New England physiographic province not represented in Vermont, is a low, smooth, sloping margin of the New England Upland; most of New England's large cities are located here. The change in topography occurs at 400 to 500 feet above sea level, where the seaward slope becomes steeper than that of the upland; the slope may be part of an old peneplain, or it may be due to a late submergence and marine planation of the seaward margin of the province

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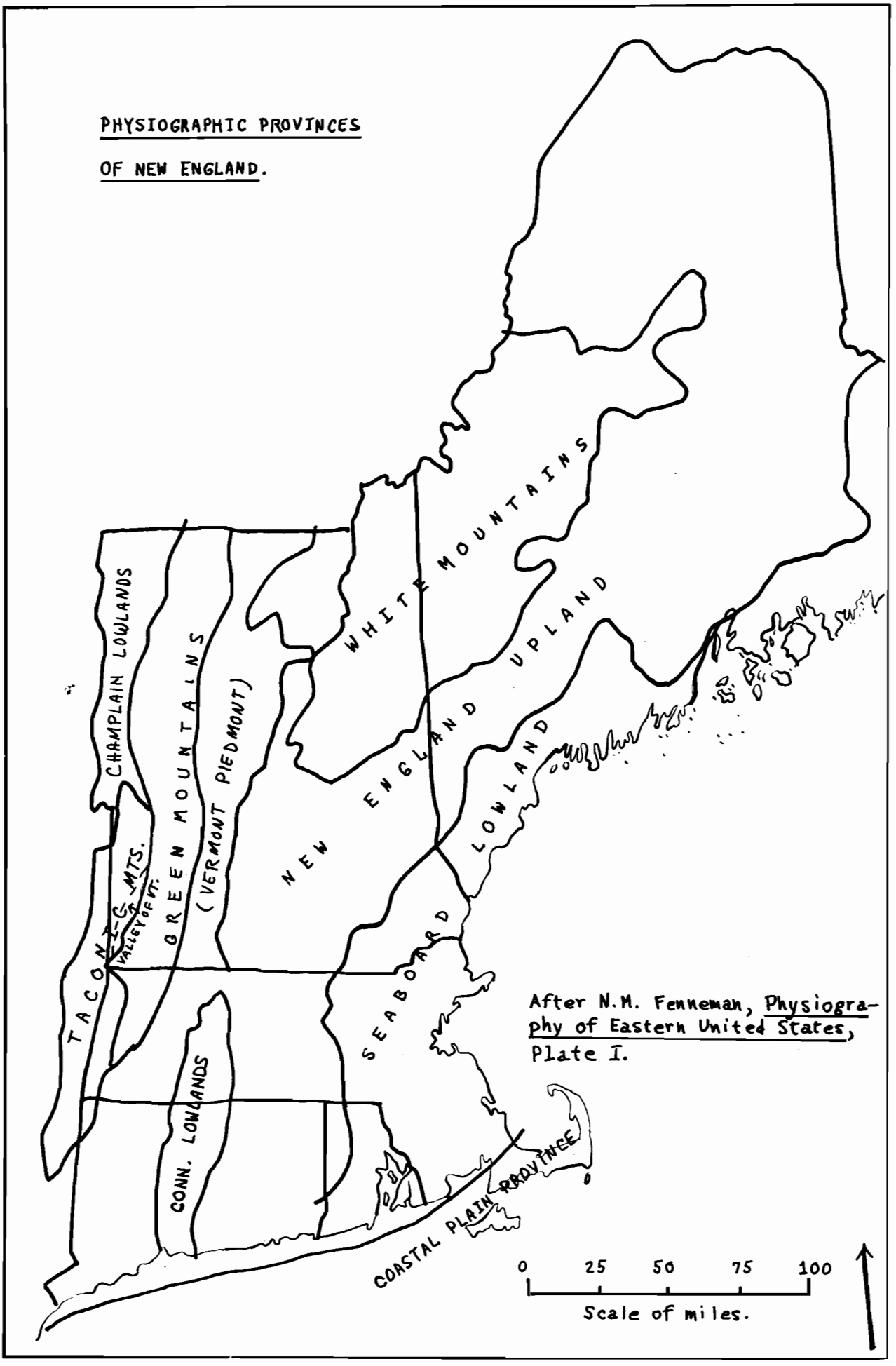
[1]This section is based on: Nevin M. Fenneman, "The New England Province", Physiography of Eastern United States, (New York, 1938), p. 343-391; Elbridge C. Jacobs, The Physical Features of Vermont, (Montpelier, 1950); and map and field observations.


PHYSIOGRAPHIC PROVINCES
OF NEW ENGLAND.
WHITE MOUNTAINS
NEW ENGLAND UPLAND
SEABOARD LOWLAND
CHAMPLAIN LOWLANDS
GREEN MOUNTAINS
(VERMONT PIEDMONT)
TACONIC MTS.
VALLEY OF VT.
CONN. LOWLANDS
COASTAL PLAIN PROVINCE
After N.M. Fenneman, Physiography of Eastern United States, Plate I.
0 25 50 75 100
Scale of miles.

MAP 8

after the New England peneplain was uplifted. The shore is submerged and increasingly irregular northeastwards. The topography before submergence, and variations in rock type, account for local differences.

The Connecticut Valley Lowland area is a sharply distinguished north-south zone in the upland section along the Connecticut River in Connecticut and Massachusetts. It has a moderately level or rolling floor 400 feet high at the foot of the lateral escarpments at the north end, sloping south with considerable uniformity to sea level. With the uplift of the New England peneplain, the softer rocks of the valley suffered differential erosion.

The Champlain Lowlands. The last major section of lowland in New England is an area of low rolling hills bordering the east shore of Lake Champlain; it is the most densely populated region of Vermont.

The White Mountain section. This rugged mountain belt rises from approximately 1,500 feet[2] to 6,290 feet (Mt. Washington), and is composed of remnants of larger, eroded masses. A plateau level of approximately 1,100 feet surrounds the mountains, and there are suggestions of upland surfaces at 1,600 feet and possibly 2,100 feet.

The Green Mountains. These mountains illustrate Vermont at its most spectacular; the average elevation of all the peaks in the range is 3,200 feet, though Mt. Mansfield (4,393 feet) and others rise above. In northern Vermont

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[2]All elevations are given in height above sea level unless otherwise noted.

the mountains, broken by river valleys, form a two-pronged ridge separated by an upland at 1,200 to 1,600 feet. In the south the mountains present an unbroken wall; roads must climb to over 2,000 feet to go from one valley to another, making east-west transportation difficult in several areas, notably between Orange County and Addison County to its immediate west on the Champlain Lowlands. The mountains, varying in width from twenty to forty miles, divide Vermont into halves, facing New York on the west and New Hampshire on the east. Crests are regular; accordant summits are relatively numerous at certain levels (i. e. 2,000 to 2,100 feet) indicating development of incipient or imperfect peneplains during intermittent rising of the land. The courses of many of the rivers suggest superposition from overlying deposits; other streams strike north-south along structural lines.

The Taconic section. This section comprises terraced, north-south trending mountains of metamorphosed sediments, with limestone valleys in between. The western hills are 800 to 1,000 feet high, and in the east a 2,000 foot level is detectable.

The Valley of Vermont. Separating the Taconic and Green Mountains there is a distinct limestone valley, varying in width and elevation. The northern end, near Rutland, has a flat floor about 2,000 feet wide at 600 feet above sea level; the valley narrows southward and in the Manchester area is over 1,000 feet wide and 800 feet above sea level. The mountains

surrounding the valley increase in height and degree of slope toward the south.

The New England Upland, including the Vermont Piedmont. This section, which embraces Vermont east of the Green Mountains and includes most of Orange County, is an up-raised, dissected peneplain with occasional monadnocks, and altitudes ranging from 1,000 to 2,000 feet. The division between it and the Green Mountains to the west, although essentially physiographic, is also geological: the mountains are composed of altered and metamorphosed sedimentary rocks - schists, gneisses, and slates, whereas the rocks of the Piedmont are mainly north-south running belts of sedimentary and metamorphic rocks with acid and basic intrusives. A north-south ridge and valley pattern is common; consequently transportation is best developed in this direction. Several accordant surfaces are recognized west of the Connecticut River in south central Vermont, but there is no agreement as to exact levels or their origin. In Vermont east of the Green Mountains (Orange County) two levels are recognizable: a 1,600 foot plateau, and a 2,100 foot level surrounding the mountains. East of the Connecticut River a single upland surface at 1,000 to 1,100 feet is suggested; it is a maturely dissected plateau, with some erosional lowlands. In northern Vermont and New Hampshire an 1,100 foot level is traceable, but monadnocks are more numerous. Most of Maine has not been topographically surveyed, but there is some evidence of a 1,100 to 1,250 foot plateau.

Glaciation. The effects of glaciation are very obvious all over New England. At the maximum of the major continental glaciations, ice covered the highest peaks and moved southward, seaward, and out the Champlain-Hudson valley; alpine glaciation was later dominant within the mountains. The ice front retreated northwards, taking 4,400 years to withdraw from Hartford, Connecticut to St. Johnsbury, Vermont. The absence of clear recessional moraines suggests frontal stagnation during deglacierization; as the ice wasted down in situ the emergence of the relief resulted in a broad margin of ice broken into several separate pieces no longer in contact with the main ice mass. Drift, largely water-laid, accumulated around these pieces, as is evident in the numerous ice-contact faces which are now orientated in all directions. The isolated blocks must have interfered with free drainage for a long time, explaining the very abundant glaciofluvial deposits.

Glacial action is self-evident over much of Vermont. Around Lake Champlain evidence of a former glacial lake at 700 feet above sea level is abundant. Many valleys show perched deltas, kames, and lateral end moraines. Several valley floors are thickly covered by a non-stony clay, suggesting that they were the beds of former glacial lakes. Many of the deeper valleys show oversteepened sides and a parabolic profile, so often associated with glacial erosion.

Vermont's physiography has destined it to be a state physically divided,

with generally poor east-west communication. This was in part the reason that New Hampshire on the east and New York on the west were able to make a claim to this territory as part of their respective colonies.

The Physiography Of Orange County[3]

Orange County lies mainly within the Vermont Piedmont section of the New England Upland, sloping eastward toward the Connecticut River. In the field many steeply dipping beds are observable in roadside cuts, suggesting that the gentle rolling upland surface, found through Orange County at 1,300 to 1,600 feet is not a structural feature but is erosional; a geological cross section of Orange County shows clearly the lack of structural control on main upland surfaces.[4] Several summits in the Knox Mountains extend above this and one higher level, and may represent monadnocks. These mountains are a granitic massive and appear to have resisted erosion better than the stratified calcareous sediments which form the main surface of the Piedmont.

The drainage of the Piedmont (see Fold Map 1, in pocket) is directed in its northern sector towards Lake Champlain (west) and Lake Memphremagog (north). In the southern section most streams drain to the Connecticut River;

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[3]This section is based mainly on observations in the field and on U.S.G.S. topographic maps of the area, at a scale of 1:62,500.

[4]C. H. Richardson, "The Terranes of Orange County, Vermont", Report of the State Geologist on the Mineral Industries and Geology of Certain Areas of Vermont, 3 (1901-1902), p. 75.

Wells River, Wait's River, Ompompanoosuc River, and others flow in a southeasterly direction with a dendritic drainage pattern. The White River, flowing in the same general direction, is joined by three prominent north bank tributaries, effectively dissecting this part of the Piedmont into north-south trending ridges, as in Illustration 1. Ascent to the upland surface was facilitated by the use of main river valleys.

Orange County contains five distinguishable upland surfaces. (Refer to Fold Map 1 and Figure 2 to elucidate this section.)

The 2,200 foot plus level in the northwestern part of the county contains the highest point, an exposed granitic mass in the Knox Mountains, called Butterfield Mountain, 3,166 feet above sea level. The relief forms are characteristically rounded. These mountains are flanked by upland surfaces whose elevations are between 1,900 and 2,200 feet above sea level. An examination of U.S.G.S. topographic maps indicates a general lowering of summit spot heights towards the south and east. Thus, cross sections (see Figure 2) drawn across the area represent either a series of upland surfaces, or one dissected surface which slopes down to the east and south. The granitic mountains and surrounding upland have never been settled.

The 1,900 to 2,200 foot surface is well dissected, with a series of deeply eroded limestone outcrops forming steep sided valleys in the western part of the area, i. e. Williamstown Gulf and Northfield Gulf. There appears

Illustration 1: North-south trending ridges, on road from East Randolph to Tunbridge.

Illustration 2: Looking west over the 1,600 foot surface on to the 1,900 foot level, from Randolph Center.

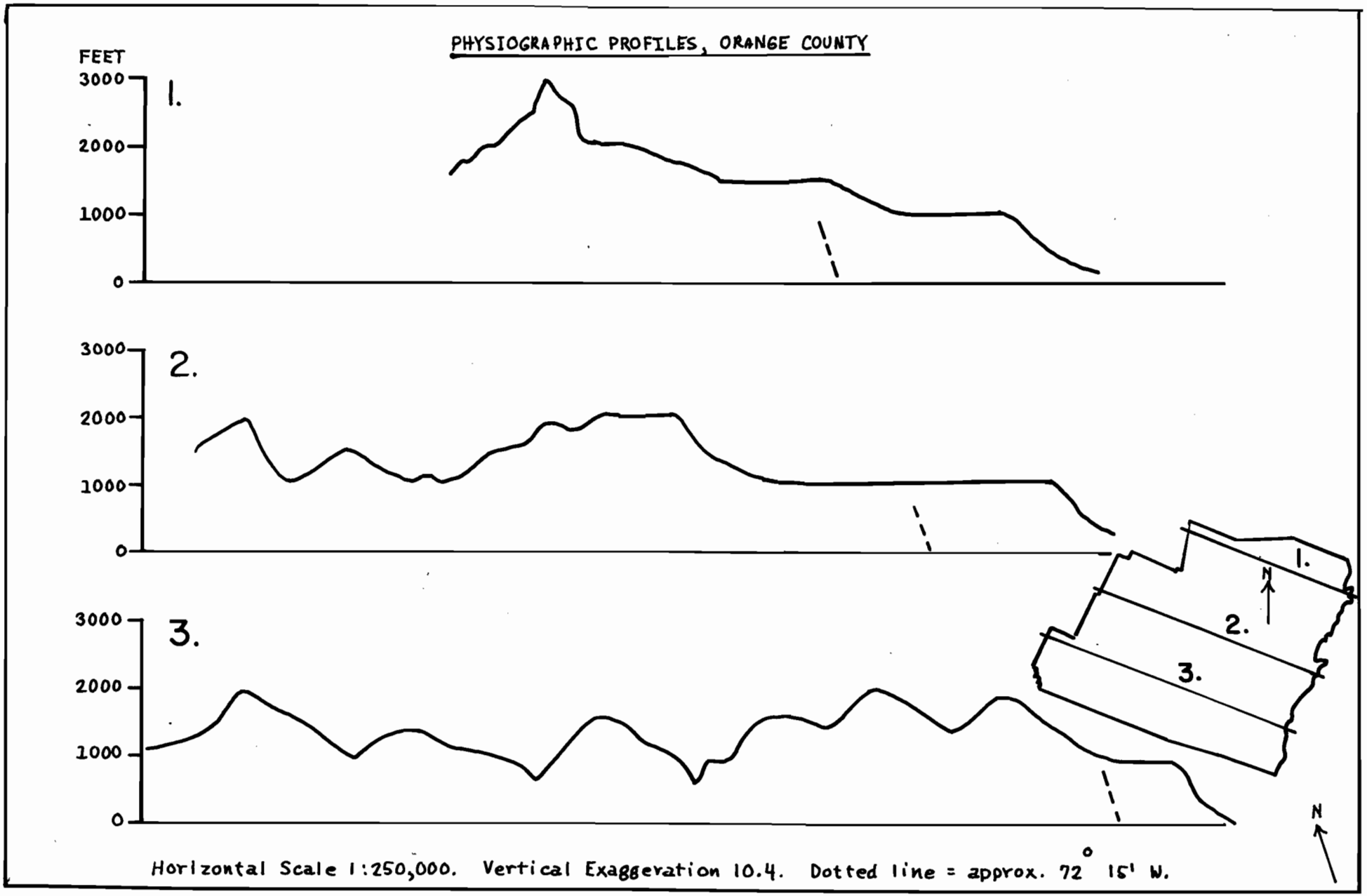
PHYSIOGRAPHIC PROFILES, ORANGE COUNTY
FEET
3000
2000
1000
0
1.
2.
3.
N
Horizontal Scale 1:250,000. Vertical Exaggeration 10.4. Dotted line = approx. 72° 15' W.

FIG. 2

to be a distinct beveling of spurs and valley sides at about 1,900 to 2,200 feet, and in the southern half of the county this level forms the summit surface (see Illustration 2, page 37). Settlement at this level has been sparse to non-existent; the small areas that were once settled have been almost entirely abandoned (see Chapter VI, page 114).

The 1,300 to 1,600 foot level has a gently rolling surface, probably as a result of sub-aereal erosion. It is the most important level in the county, having been extensively cleared and cultivated; the poorer, hilly sections have been abandoned but much is still in cultivation (see Illustration 3). Many farms and villages are located here: Newbury Center, West Topsham, Orange, Brookfield, and Randolph Center (see Illustration 4).

A distinct surface at 900 to 1,100 feet is observable on either side of the Connecticut Valley as in Illustration 5; settlement here has been sparse and much land has been abandoned.

The present valley floors form the last major surface and are related to present day base levels. They vary greatly in elevation throughout the county and from point to point along their courses. Field observations revealed a great diversity in physical conditions of the valley bottoms, with the main physical influence being glacial. Certain of the valleys, such as the Third Branch of White River north of Randolph, are floored with a glacial lacustrine clay, while other valleys, such as that of the First Branch of White River in

Illustration 3: Looking west from Randolph Center, pasture land and second growth woodland on the 1,300 to 1,600 foot level.

Illustration 4: Farms in Randolph Center, a village on the 1,300 to 1,600 foot level.

Illustration 5: Nine hundred to 1,100 foot surface in background, Connecticut River valley, Bradford, foreground.

Illustration 6: Glacial valley of First Branch of White River, Tunbridge. Note moraine hummocks to left of lacustrine clay floor of valley.

Tunbridge, are filled with hummocks of sand, gravel, and till (see Illustration 6).

The river bottoms have always been a major area of settlement, and now represent the most extensively settled areas in the county.

Thus Orange County has presented two desirable physical areas for settlement; the river valleys, and the gently rolling upland surface at 1,300 to 1,600 feet, gained after ascending the small stream valleys leading up from the Connecticut Valley. The lengthy, easily traveled, Connecticut River valley was of prime importance in early communications (see Illustration 7).

Transportation into Orange County, more fully discussed in Chapter IV, in early times followed river valleys, mainly the Connecticut River and its tributaries. Whereas some settlers stopped to settle in these valleys at good water power sites (see Map 24, p. 103, for locations) others followed the streams to their heads and settled on the upland surfaces.

II. CLIMATE

The influence of climate on early settlement was manifest in the tendency of the pioneers to move into climatic areas somewhat similar to those they had just left where they could practice familiar farming methods.

Illustration 7: Connecticut River valley, Newbury.

The Climate of New England[5]

New England lies within Köppen's "Dfb" climatic type[6], a broad area of humid continental cool summer climate. Continental polar air masses dominate in winter causing stable cold conditions; in summer, maritime tropical air masses bring maximum precipitation from cyclonic storms.

Several influences combine to modify New England's climate from the generalized "Dfb" type:

1. The influence of the Atlantic Ocean and Gulf Stream keeps the lowlands cool in summer.

2. The prevailing winds sweep from the west and north into New England, but the rapid passage of high and low pressure areas shifts the winds often to the east and south, moderating winter weather in the lowlands.

3. Altitude keeps the uplands cool in summer as the temperature decreases by 3° to 4°F. for each 1,000 feet of vertical rise.

Temperatures in July in New England vary from 60°F. to 70°F. A comparison of Maps 9 and 10 will show that summer temperatures are altitude-controlled to a large extent, whereas the January isotherms indicate a more

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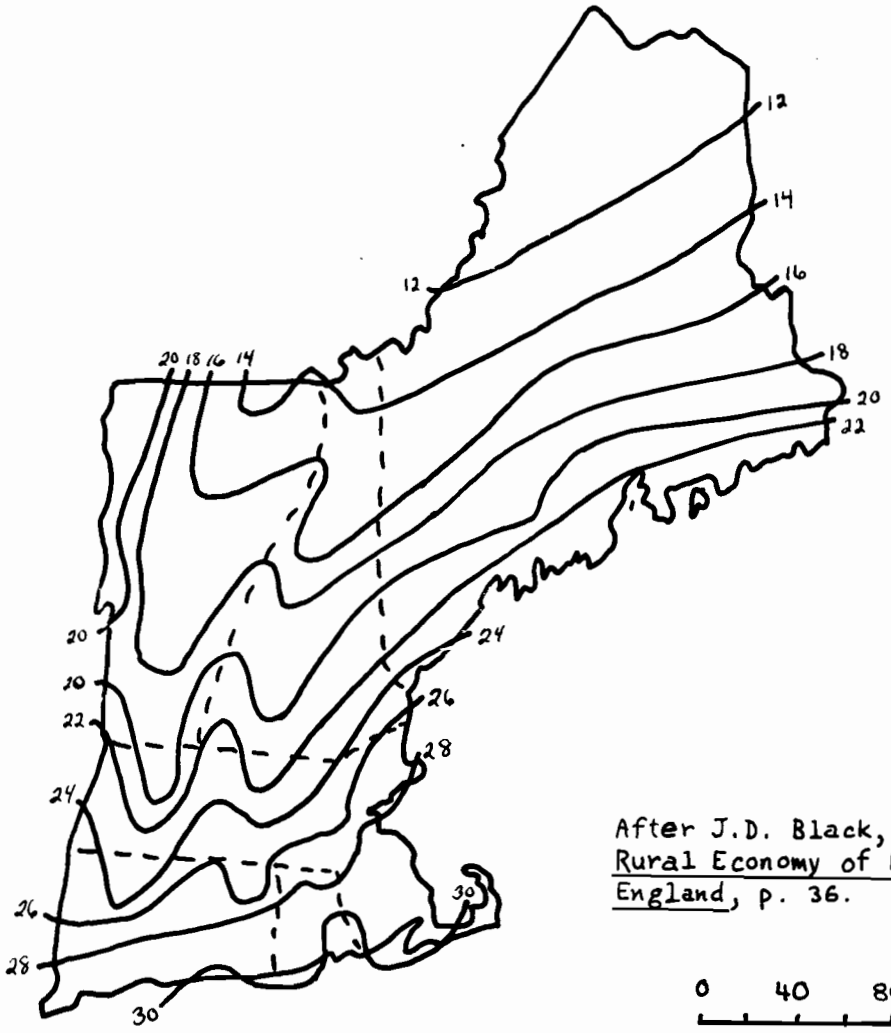
[5]This section is based mainly on: J. D. Black, "Natural Endowments", The Rural Economy of New England, (Cambridge, Mass., 1950), p. 35-44.

[6]For full explanation of the climatic classification system devised by Wladimir Köppen, see Arthur N. Strahler, Physical Geography, (New York, 1960), p. 184-188. "Dfb" is explained as follows: D = warmest month mean over 50°F., coldest month mean under 26.6°F.; b = warmest month under 71.6°F.; f = adequate precipitation in all months.

JANUARY ISOTHERMS IN NEW ENGLAND



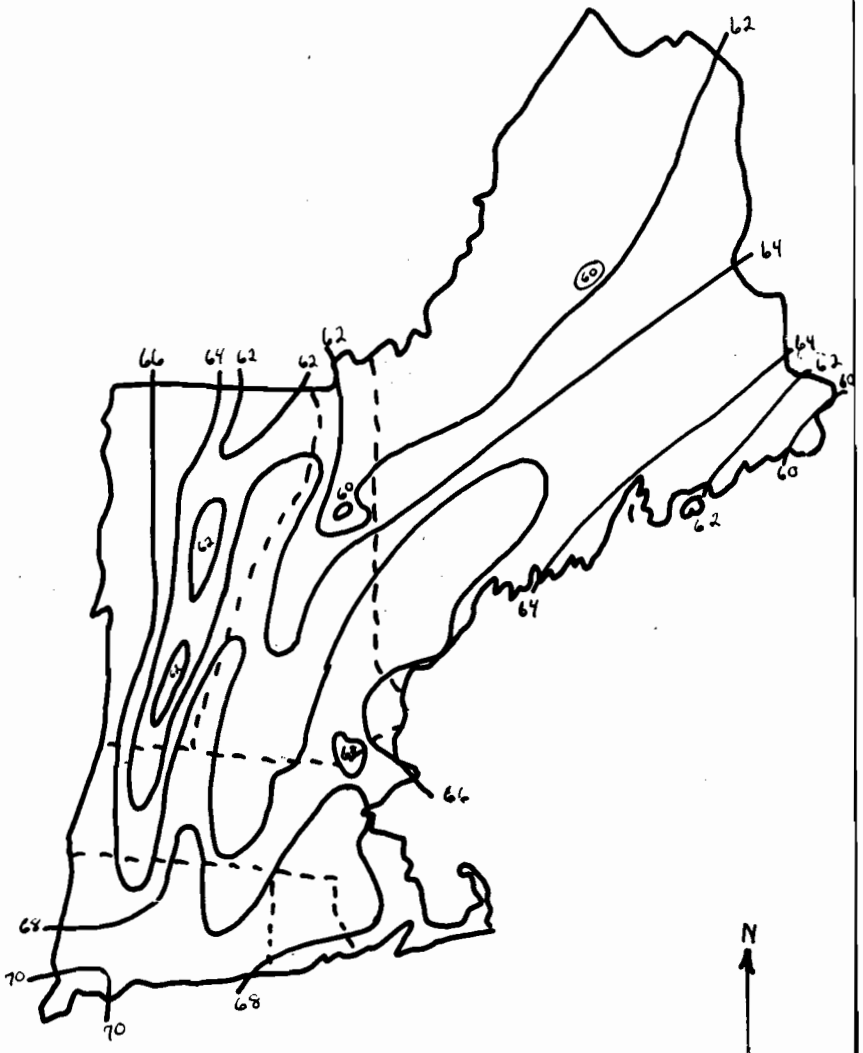
After J.D. Black, The Rural Economy of New England, p. 36.

0 40 80

Scale of miles.

MAP 9

JULY ISOTHERMS IN NEW ENGLAND



In degrees Fahrenheit

MAP 10

regular gradient, but with some deviations due to topography. The frost-free period varies from 200 days on Cape Cod to 90 days in northern Maine.

Annual precipitation varies from below 35 inches in northwestern Vermont and extreme northeastern Maine, to nearly 50 inches in Rhode Island and Connecticut (see Map 11). The foothills and valleys in the rain shadow east of the mountains have the lightest rainfall. Seasonal distribution is determined by a combination of oceanic and continental influences modified by altitude and relief. The coastal area has maximum rainfall from December to March because winds drawn in from the ocean as the storm centers approach and cross New England are unable to retain their moisture over the cold winter land surfaces. In the interior, especially west of the mountains, the heaviest rainfall comes from June to September. Droughts and hailstorms occur occasionally. Snowfall is between 30 and 100 inches, increasing inland and with altitude, as is evident on Map 12 on page 47.

The Climate Of Orange County[7]

The climate of an area as small as Orange County still varies from place to place (see Maps 13 - 16).

The average annual temperature in the county is 40° to 42°F. with a

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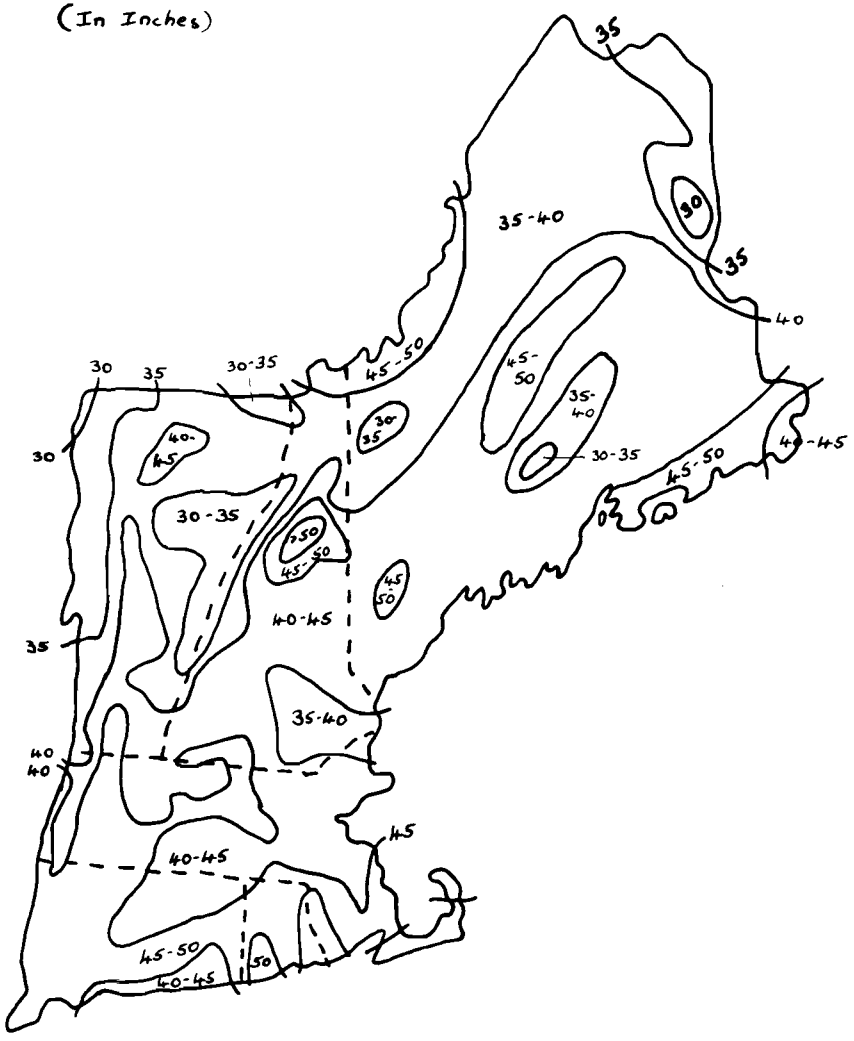
[7]Black, op. cit., (1950), p. 35-44; Vermont Commission on Country Life, Rural Vermont: A Program for the Future, (Burlington, 1931), p. 37-39, 42.

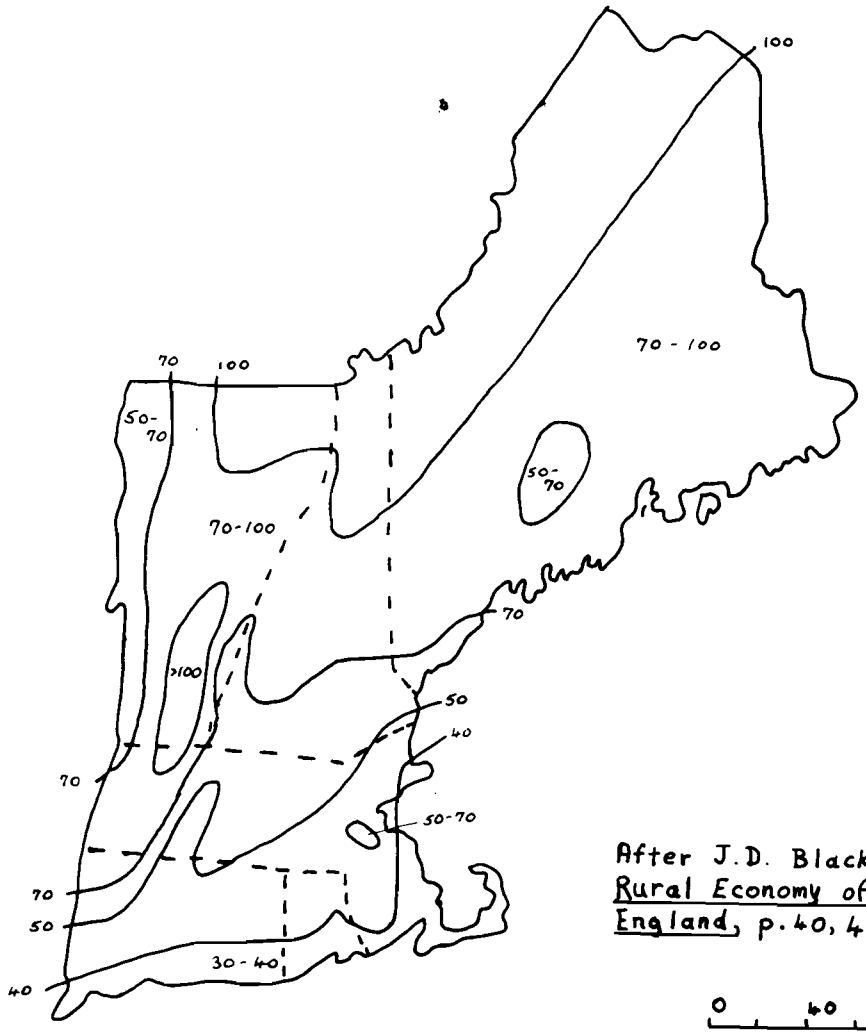
AVERAGE ANNUAL RAINFALL, 1881-1925, NEW ENGLAND

(In Inches)



MAP 11

INCHES SNOWFALL, 1915-1916, NEW ENGLAND.



N

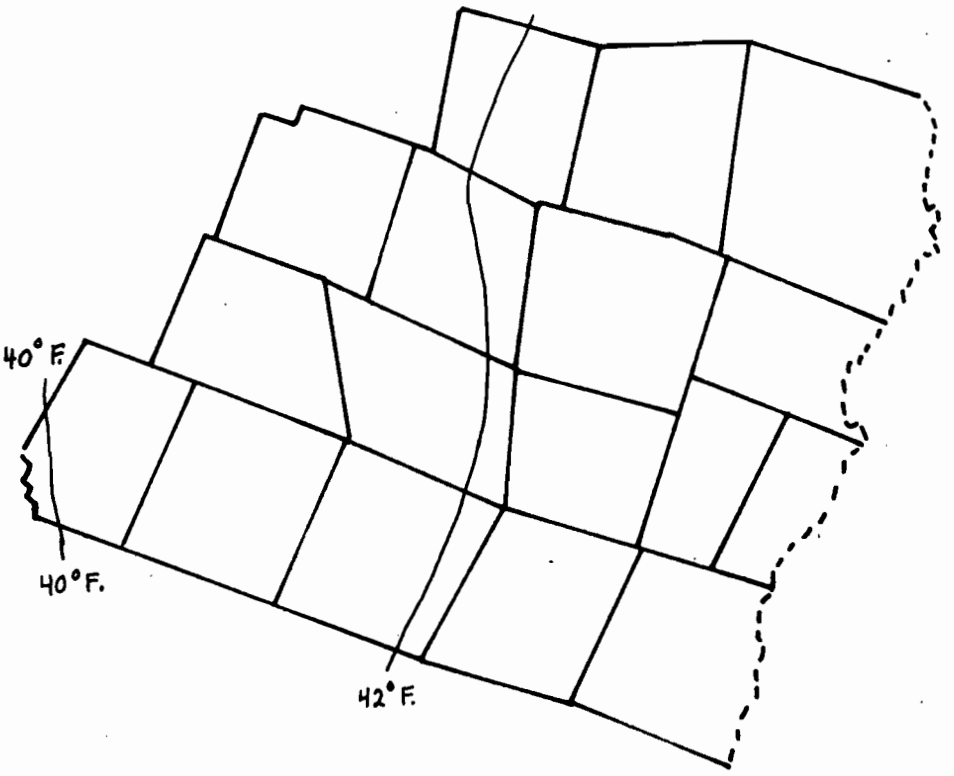
After J.D. Black, The Rural Economy of New England, p. 40, 43.

0 40 80

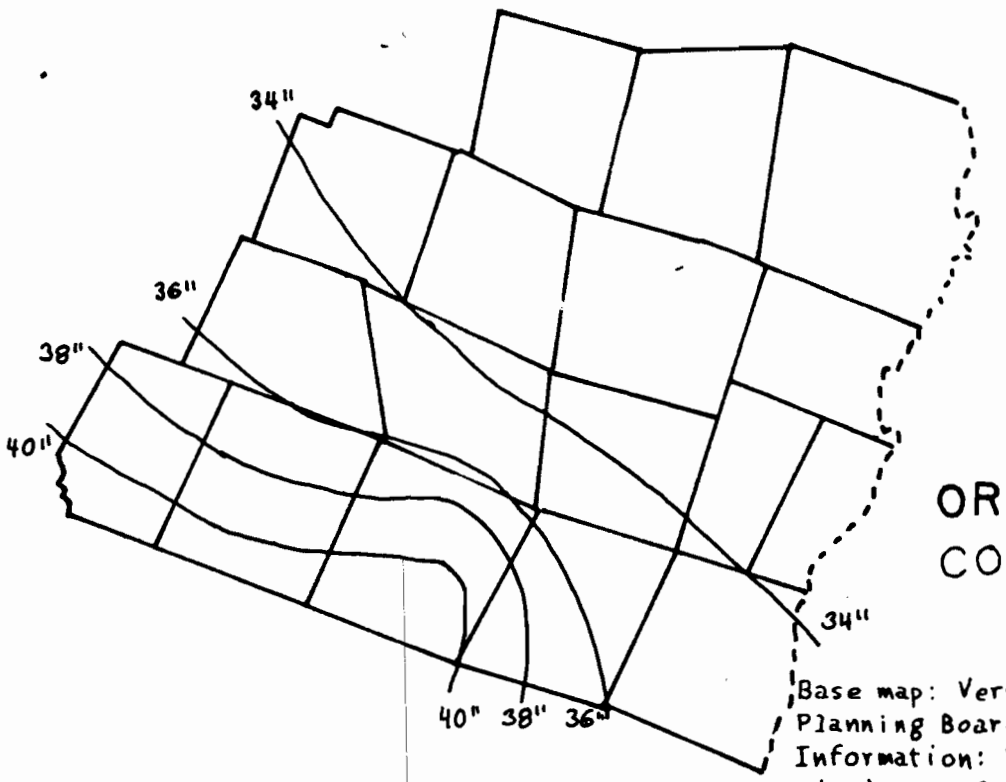
Scale in miles.

MAP 12

AVERAGE ANNUAL TEMPERATURE



AVERAGE ANNUAL PRECIPITATION



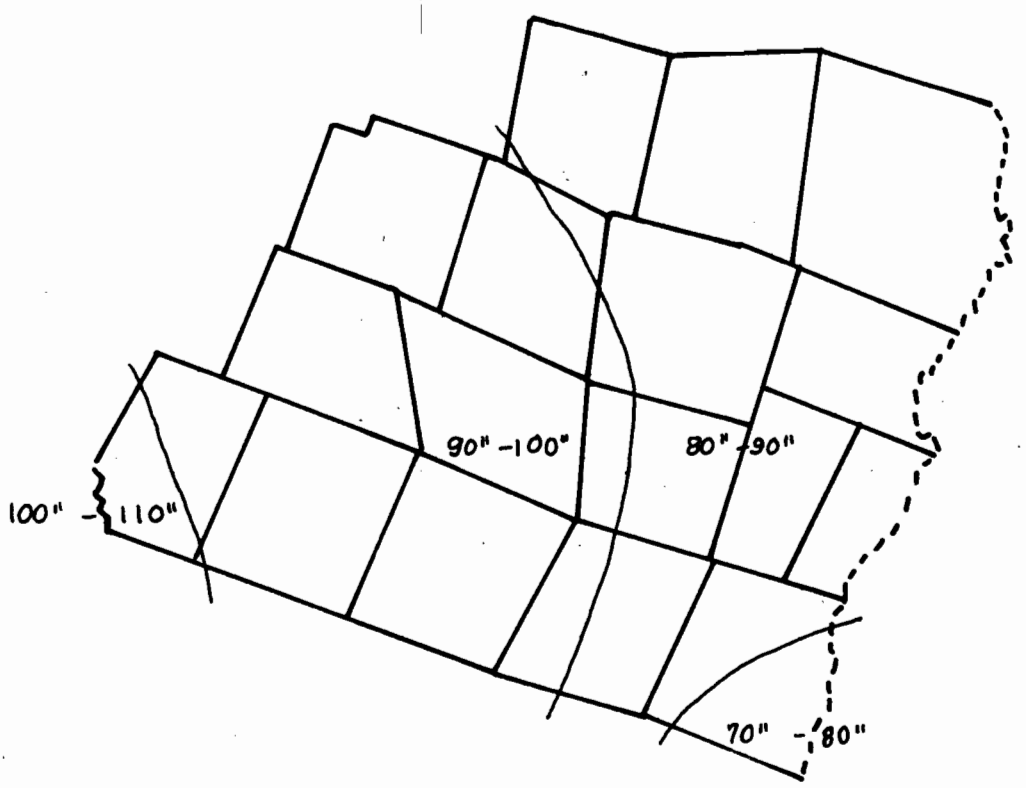
ORANGE
COUNTY

Base map: Vermont State Planning Board, 1939.
Information: Vermont Commission on Country Life, Rural Vermont, p. 37-38.

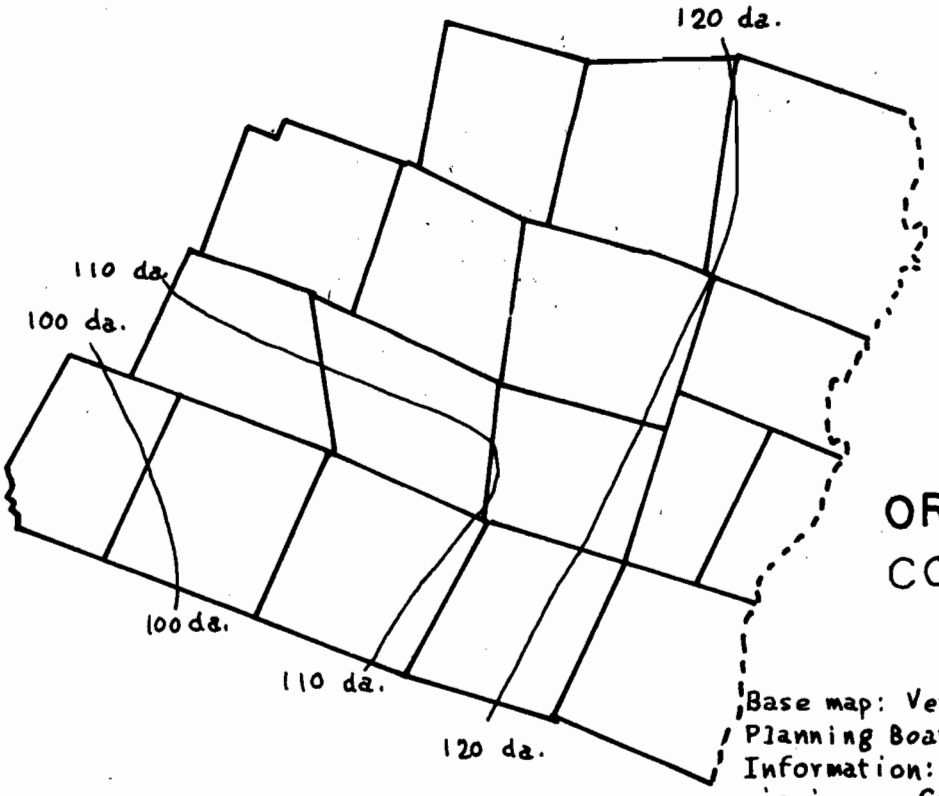
0 5 10 MILES

MAPS 13 & 14

AVERAGE ANNUAL SNOWFALL



AVERAGE GROWING SEASON



ORANGE COUNTY

0 5 10 MILES

Base map: Vermont State Planning Board, 1939.
Information: Vermont Commission on Country Life, Rural Vermont, p. 39, 42.

MAPS 15 & 16

temperature range in Chelsea[8] from the July average of 66.7°F. to a January average of 15.8°F. Precipitation of all forms totals 34 to 40 inches per year (34.86 inches in Chelsea), increasing southwesterly. Snowfall is very heavy; 100 to 110 inches falls in the western part of the county on the leeward slopes of the Green Mountains, but the amount decreases rapidly east of the mountains as altitude decreases. Most of the county records 70 to 90 inches snowfall in an average year.

Climatic data from Hanover, New Hampshire, a Connecticut River valley town about six miles south of the southeastern corner of Orange County, seem representative of the southern and eastern parts of Orange County (see Figure 3). Over 35 inches total annual precipitation is distributed quite evenly with a slight summer maximum, and 72.7 inches of snow. Temperatures range from 17.4°F. to 68.5°F. in an average year, slightly warmer than Chelsea. The growing season averages 133 days from May 18 to Sept. 28, while in Chelsea it is only 111 days from May 30 to Sept. 18.

As is evident from the maps and the preceding discussions, temperature and growing season decrease and precipitation increases with altitude in a west-southwesterly direction in the county. The most important climatic factor in an agricultural county is the length of the growing season. In this respect the Connecticut valley is best, but the growing season is adequate in most of the county for most of the better agricultural lands to be utilized, although

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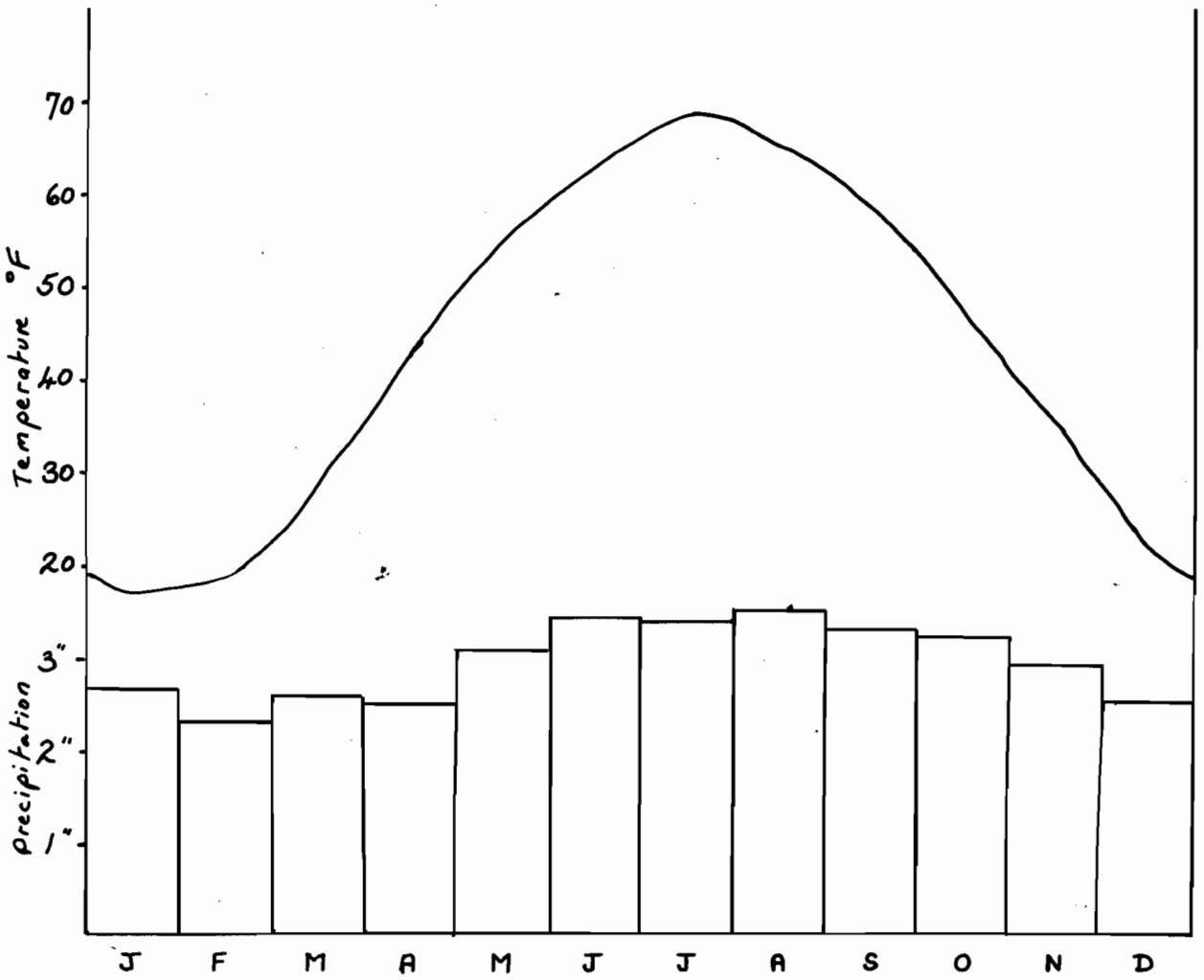
[8]Statistics for Chelsea from: United States Dept. of Agriculture, Yearbook of Agriculture: 1941. Climate and Man. (Washington, 1941), p. 991.

Figure 3:



HANOVER, N.H.

Climatic type: 'Dfb'
Mean annual temperature: 43·4°F
Annual precipitation: 32·25 inches.
Source: Unpublished, mimeographed data from Dartmouth College, Dept. of Geography

there are years on record when unusually late or early frosts ruined crops.

Local micro-climatic variations are not well documented, but would include differences between valley and upland, southern and northern slopes, and local air drainage, all of which might induce settlers to prefer one site to another in the same area.

III. SOILS

The soils of an area, although not determining the location of initial settlements due to the pioneer's lack of technical knowledge in determining soil fertility, are ultimately a contributary factor to the success of an agricultural community. Very few areas in New England have good soils.

The Soils Of New England[9]

The soils of New England are immature, still reflecting the nature of the parent material. They are classified in the major group Podzols, with the following associations: podzolic, two gray-brown and three brown podzolic, groundwater podzolic, lithosols and shallow soils, and bog soils. Podzolization is a process whereby iron and aluminum are removed more rapidly than silica from the A horizon (topsoil) and deposited in the B horizon (subsoil). This

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[9]J. D. Black, "The Soils", The Rural Economy of New England, (Cambridge, Mass., 1950), p. 179-182.

process is especially active in areas of coniferous and mixed coniferous forests, with good drainage and a cool moist climate, such as New England. The soils are acid, and suitable only for trees, grass, and root crops with fertilization. Most of New England's agriculture is on brown podzolic soils. Thirty-five per cent of the New England soils are stony, twenty-nine per cent heavily forested and non-agricultural, and only thirty-six per cent moderately free of stones, some of which is sandy, gravelly, or swampy. Therefore, natural soil resources are poor; the soils were never naturally fertile and were impoverished within three to ten years of cultivation, if not fertilized.

The early settlers quickly learned to use fertilizers. "Asheries" were operated in many communities, including several in Orange County; potash was manufactured by burning hardwood to ash. Advantage of the relative abundance of land was taken to pasture livestock on newly cleared fields, afterwards using these manured fields for crops, and moving the cattle on to another new field. When reasonably fertile land became scarce, farmers in Massachusetts and Connecticut moved north to Vermont and New Hampshire.

The Soils Of Vermont[10]

The soils of Vermont are of the podzol, gray-brown, brown, and groundwater podzol associations. Major distribution patterns, as seen on Map 17, page 55,

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[10] Ibid., p. 195-199.

are as follows: gray-brown podzols in southern Vermont on the western slopes of the Taconic Mountains, near Lake Champlain, and in bands along the Connecticut River; brown podzols on the lower, eastern slopes of the Green Mountains toward the Connecticut River, on the western front of these mountains in the north and center sections of the state, and between the mountains and the Vergennes ground-water podzols in the Champlain valley. The rest of the state has mainly podzolic soils due to latitude and altitude.

In a classification of Vermont soils,[11] fifty per cent are described as poor, thirty-five per cent medium, and fifteen per cent good. Sixty per cent of the land is stony, and very little of the "good" land is really excellent.

Thus the very nature of the soils in Vermont would suggest a transitory life for agricultural communities; the opening up of better lands farther west, and the advent of commercial agriculture would preclude the necessity of toiling for a living from these poor soils.

The Soils Of Orange County And Associated Natural Vegetation

Orange County is especially poorly endowed with soils. Brown podzols and podzols are found almost exclusively, with no ground-water podzols, and only a very small area of gray-brown podzols (see Map 17).

The gray-brown podzol association is represented by a very small area

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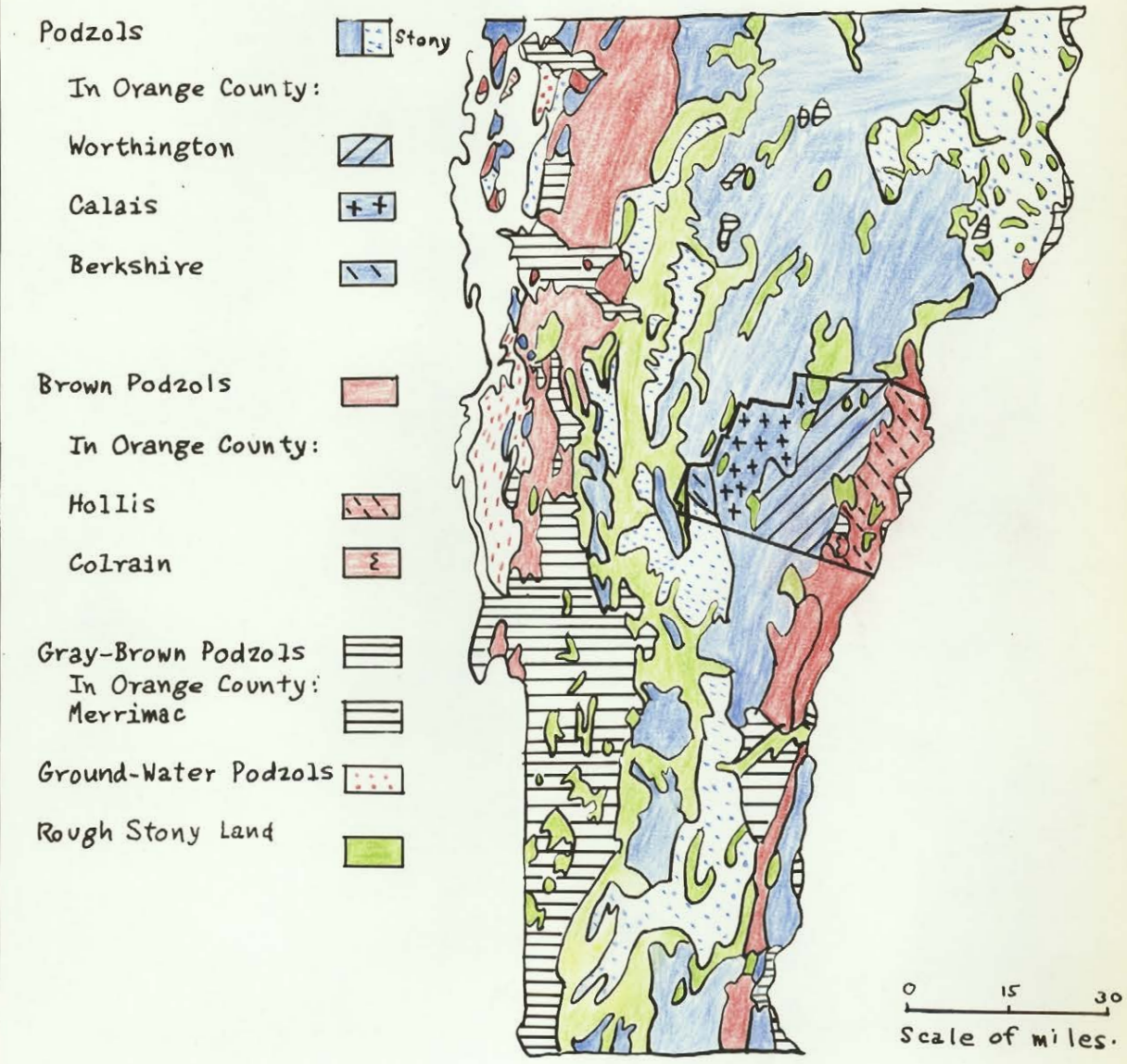
[11] Ibid., p. 199.

SOILS OF VERMONT



Vermont Commission on Country Life, Rural Vermont, p.49.

MAP 17

of the Merrimac series along the Connecticut River in Bradford and Fairlee. They are terrace and outwash deposits laid down by glacial meltwaters. Texture and productivity range widely, but some of the best agricultural land in southern New England is on Merrimac soils. In Orange County, this section is good crop land.

The brown podzols are represented by the Hollis and Colrain series. The Hollis series borders the Connecticut River in a band extending roughly five miles westward: the Colrain series is a small pocket on the western border between the Hollis and Worthington series. Both series are derived from limestone and schist on the eastern slopes of the Green Mountains. Trees, pasture, hay, apple orchards, and a few crops are grown on them.

The podzols cover about two-thirds of Orange County. Several series occur:

1. The Worthington series forms a north-south running band about seven miles wide, immediately west of the Hollis band. The Berkshire-stony soils occur in the southwest corner of Orange County in Braintree. The Berkshire-Worthington soils, in the virgin state, had a layer of leached sands only about an inch thick, underlain by a rust-brown and somewhat lumpy B horizon, and a flinty, compact substructure. The Berkshire soils were located above 1,500 feet on mountain ridges. Original forests were coniferous, red spruce dominant higher up, and hemlock and white pine lower down. The Berkshire-

stony loams occupy ridges and hilltops of the old plateaus and accompanying slopes. Timber was dominatly coniferous, with some yellow birch, maple, and aspen. Farming was abandoned on these stony soils wherever it was attempted.

2. The Calais series forms the third major series, after Hollis and Worthington, extending westward from the Worthington soils and covering most of the remainder of the county. This soil was developed from a limy schist piled up by the glaciers, and located on the ridge tops and smoothly sloping hillsides. Potatoes can be grown here, and grass grows well, supporting the dairy industry.

3. Interspersed throughout all of the major soil series in the county are small patches of the Rough-Stony series. In a natural state it was covered with a white pine dominant coniferous forest. Only a small fraction of it was ever cleared, and then for pasture.

In accordance with the classification of Vermont soils referred to on page 54, the only "good" soil in Orange County is the tiny patch of Merrimac soil along the Connecticut River. The Calais and Colrain series are classified as "medium", whereas the Hollis, Berkshire, Worthington and Rough-Stony series, about two-thirds of the county, are "poor", that is rough, stony, or shallow.

The quality of the soils had little effect on original settlement; however subsequent land abandonment was much influenced by the poor quality of soil (compare Map 17 to Fold Map 2). Due to the accumulation of humus in

the topsoil over hundreds of years, the soil seemed at first to be extremely fertile, but was depleted after a few years of use.

IV. VEGETATION

Orange County lies in the northeastern United States zone of mixed broadleaf deciduous and needleleaf evergreen forest. Mountainous areas are predominantly evergreen covered; uplands have mainly a hardwood cover, and stream valleys contain conifers and cedars. The soil-vegetation-altitude relationship has already been briefly discussed in the previous section on soils.

The natural vegetation of the county was severely disrupted by the early settlers. Large areas of the county were cleared for cultivation, leaving the original forest standing only in rough and mountainous areas (see Fold Map 2); thus much of the county today is covered by second growth forest. The early settlers used the hardwood timber of the uplands for building purposes. The large amount of timber from cleared lands, which far exceeded building needs, was burned and made into pot and pearl ashes, the earliest item of export from Orange County. Later the value of timber was recognized and it became an early item of export, rafted downstream to markets in southern New England. Forest products at present form a large item in the economy of the county.

Chapter IV

SETTLEMENT IN ORANGE COUNTY: 1760 - 1790

During the French and Indian Wars, the presence of warring Indians in Vermont and Orange County was an obvious deterrent to white settlement; when the fighting officially ended in 1760, the favorable political situation invited rapid immigration by farmers from overcrowded southern New England. Land was distributed by the proprietary system; the first lands settled were on the Connecticut River, but by 1790 settlement had spread westward to include all towns in Orange County.

I. INDIANS: THE FIRST INHABITANTS

Members of nomadic Indian tribes, traveling up and down the Connecticut, White, and Wells River systems between Canada and southern New England, often stopped to hunt and fish in Orange County. (See Map 3, page 15, for location of various tribes.) The Algonquins and Iroquois used Orange County as a battleground, thus inhibiting continuous Indian settlement there. Remains of numerous Indian campsites, but few village sites, have been found in Vermont.

There is evidence of Indian habitation in Williamstown and Thetford, but their main, and probably sole "permanent" village in Orange County was

on the Great Oxbow meadow in Newbury. A large part of this meadow was cleared and cultivated by the Coosuck band of the Abenaqui tribe for many years.[1] Relics, including arrow heads and crude domestic implements, have been found here.[2] Game hunting, fishing, and small scale maize agriculture provided a living for these semi-nomadic people.

In 1721 the Coosucks were defeated in a fight in New Hampshire, after which they moved north into Canada and were absorbed by a tribe at St. Francis, Quebec. After 1760 several families returned to the Newbury meadows and remained until they became extinct.[3]

II. LAND POLICIES FAVORING RAPID SETTLEMENT

Vermont's policy of offering cheap lands in the latter half of the eighteenth century was designed to encourage rapid settlement of this unpopulated area. The territory was trying to augment its treasury by disposing of land for a profit through land companies modeled after their forerunners, the proprietors of early New England. Thus it hoped to cover political expenses connected with its attempts to organize as a state, and costs of military

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[1] F. P. Wells, History of Newbury, Vermont, (St. Johnsbury, 1902), p. 30.

[2] Benjamin H. Hall, History of Eastern Vermont, (New York, 1858), p. 586.

[3] Ibid., p. 585-586.

preparation for the Revolutionary War.

The Proprietary System Of Granting Land

Since Vermont and Orange County were settled mainly through the proprietary system it seems relevant to discuss the background of the system and its history in New England.

One form of the proprietary system was practiced early in England; the King controlled large tracts of unclaimed lands which he disposed of as rewards, or for other purposes, to members of the British nobility. The grant was usually considerable (such as the entire states of Pennsylvania and Maryland) and was granted to one proprietor, who then had nearly complete power to govern those who settled on his land. The system evolved into a highly efficient and successful method of promoting settlement in New England.

The proprietary system in Massachusetts. The proprietary system experienced its most useful period in seventeenth century Massachusetts. The English Crown granted land titles to colonial governments; in Massachusetts the General Court further distributed the land by means of granting townships to worthy applicants. The following procedure was used in making grants:

1. A group of people petitioned to become proprietors of a new area.
2. A special committee of the General Court considered the case carefully to see if the applicants had honest intentions of settling

upon the land.

3. If this intention was evident the Committee surveyed and laid out a township, usually six miles square, and a charter was issued to the proprietors.[4]

The proprietors were expected to occupy the land themselves and encourage other settlers to do so, to provide religious and educational opportunities for the settlers, to divide the land, and to control the common field. They had power to levy taxes and penalties, sue and be sued, and formulate by-laws. The proprietors encouraged people in service industries, such as millers and blacksmiths, to come into the town with the special benefit of a land or cash bonus.

There were usually four or five proprietors to whom the grant was charged. Land was distributed among all proprietors voted into membership by the original group, and to others who became inhabitants of the town. When all of the common undivided lands were taken up, the proprietary had fulfilled its primary function.

In Massachusetts, the proprietors followed a system of land division which resulted in each land holder having a fragmented property. The five rights customarily reserved for educational and religious purposes, along with a part of the common land, usually were located in the center of a township.

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[4]Florence M. Woodard, The Town Proprietors in Vermont: The New England Town Proprietorship in Decline, (New York, 1936), p. 14.

Around these lots were located the house lots of the villagers. Each house lot contained enough room for the house, a few outbuildings, and a garden, and each member of the town had an additional lot of meadow land, usually near a river, for forage crops and grazing and also a large plot of land, often 100 acres, in the woodlands of the town.[5] The size of each holding depended on its estimated value, and an attempt was made to distribute the land equally. The undivided lands were held in common until a new member came into the town. This fragmented system of land division was agreeable to the inhabitants who wished to possess part of each of the several types of land found in most townships on New England's varied terrain.[6]

The proprietary system in Massachusetts worked well in the seventeenth and early eighteenth centuries when the proprietors had an honest interest in the settlement and development of their lands. By the middle of the eighteenth century, however, the idea of land speculation had become prevalent, and many proprietors never settled on their land, but held it for speculation.

The proprietary system and the New Hampshire Grants. In 1741, King George III of England authorized Benning Wentworth, the governor of the colony of New Hampshire, to grant townships.[7] Since Wentworth considered the

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[5] Ibid., p. 23; Glenn T. Trewartha, "Types of Rural Settlement in Colonial America", Geographical Review, 36 (1946), p. 569.

[6] Ibid., p. 570.

[7] Woodard, op. cit., (1936), p. 46.

land west of the Connecticut River to be part of New Hampshire, he granted approximately 140 townships there between 1749 and 1764. Many towns in Orange County were included in the New Hampshire Grants (see Table I, page 68). In keeping with the speculative tendencies of the time, Wentworth kept 500 acres of each township for himself[8] (see Wells River Village, Map 18, page 72). The late eighteenth century proprietors were different in character from those of the seventeenth century; many never saw the land which had been granted to them, and those who did were interested only in speculation with no intentions of settlement. Thus the tendency towards scattered settlement increased.[9] (See differences between date granted and date settled on Table I, page 68).

Under the New Hampshire system of grants, lands were secured with the following provisions:[10]

1. The grantee paid an annual rent of one ear of Indian corn for ten years.
2. Ten years from the date the grantee paid one shilling proclamation money for every 100 acres he owned.

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[8] Ibid., p. 53.

[9] F. Grave Morris, "Some Aspects of the Rural Settlement of New England in Colonial Times", London Essays in Geography, 14 (1951), p. 225.

[10] Genieve Lamson, "Geographic Influences in the Early History of Vermont", Collections of the Vermont Historical Society, 5 (Essays in the Social and Economic History of Vermont, 1943), p. 106-107. M.Sc. thesis, University of Chicago, 1922.

3. He had to plant and cultivate five acres of land within three years for every fifty acres contained in his share.

These provisions seemed to assure effective settlement of the land. Each charter provided for the organization of the town. The township was generally six miles square, enclosing 23,040 acres. It was divided into seventy-two shares of 320 acres each, four of which were reserved for public rights, one for the society for the propagation of the Gospel, one for a glebe for the Church of England, one for the first settled minister, and one for schools.

The proprietary system in the state of Vermont. When Vermont began granting its own charters in 1781, conditions included were basically the same as in the New Hampshire charters, but were less strictly regulated. Vermont's land policy was affected by the need for revenue. One source of income was the sale of properties belonging to British subjects who had remained loyal to the Crown during the Revolutionary War, and had been driven from their homes, mainly to Canada's Eastern Townships, southeast of Montreal. The main source of revenue was through disposal of land for profit, in keeping with the speculative craze which was accompanying the rapid opening up of vast new tracts of land in the U.S. The state of Vermont confirmed all unconflicting charters of existing townships and then proceeded to grant charters, at a price, for its unappropriated lands to land companies, who answered advertisements made public by Vermont in all states of the Union. The land companies were similar

to the proprietary groups of earlier days rather than to the land companies later known in the West as speculators inhibiting settlement. The company usually had sixty-five members under a leader who petitioned the Vermont legislature for a grant of land, usually a township (synonymous with "town" in New England, each "town" usually had several nucleated settlements known as villages within its bounds). These proprietors had most of the powers outlined on page 61. The grants provided for a six square mile township divided into sixty-five proprietary shares and five shares for public rights: one for a seminary or college, one for county grammar schools, one for a minister, one for the worship of God, and one for an English school.[11] The conditions on which the proprietors held the land were:

1. That they plant and cultivate five acres of land.
2. That they build a house at least eighteen square feet on the floor, or have a family settled, on each respective right within the term of four years, next after the circumstances of the war will admit of a settlement with safety, under penalty of forfeiture of title.
3. All pine timber suitable for a navy should be reserved for the use and benefit of the freemen of the state.[12]

These conditions encouraged rapid settlement of granted lands.

The changes in the proprietary system in the eighteenth century, during which time most of Vermont and Orange County were settled, resulted in a

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[11] Woodard, op. cit., (1936), p. 124.

[12] Ibid., p. 125.

different form of individual land holding and settlement. The proprietary system in Massachusetts had provided several fragmented plots of land for each settler. Because the house lots were small and in one general area, a compacted type of village settlement resulted. By the end of the eighteenth century in Vermont, disadvantages in having a village residence with scattered farm plots were evident and a tendency developed to grant rights in one piece. It was also advantageous to the speculator to have consolidated land plots for easy disposal. The sudden availability of large tracts of cheap land was a factor which resulted in a rapid movement of settlers from agriculturally overcrowded southern New England to the frontier regions. The land companies competed with each other to attract these settlers to their holdings.

According to Woodard,[13] the general state of decline in the proprietary system was due to economic factors. By the eighteenth century there was a sound economic basis in the new colonies; besides agriculture, there was the development of other economic activities which gave rise to the creation of a surplus capital which could be invested in land sold by colonial governments in need of revenue.

The proprietary system as it functioned in Orange County.[14] As can be seen on Table I, New Hampshire granted seven townships in Orange County from

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[13] Ibid., p. 152-154.

[14] Although at present there is some controversy among historiographers about the proprietary system, the information recorded and interpreted by Woodard seems more or less applicable to the case of Orange County.

TABLE I

GRANTS FOR TOWNS IN ORANGE COUNTY

Town	Date of Grant*	Year First Settled**
Bradford	N.Y. grant as Moorestown, May 3, 1770. Name changed Oct. 23, 1788. Vermont grant Jan. 25, 1791.	1765
Braintree	Vermont grant Aug. 1, 1781.	1785
Brookfield	Vermont grant Aug. 5, 1781.	1779
Chelsea	Vt. grant as Turnersburgh, Aug. 4, 1781. Name changed Oct. 23, 1788.	1784
Corinth	N.H. grant Feb. 4, 1764. Confirmed N.Y. grant Mar. 2, 1772.	1777
Fairlee	N.H. grant Sept. 9, 1761. Divided to form West Fairlee Feb. 25, 1797.	1766
Newbury	N.H. grant May 18, 1763. Confirmed N.Y. Mar. 19, 1772.	1762
Orange	Vermont grant Aug. 11, 1781.	1793
Randolph	Vermont grant June 29, 1781 almost identical with N.Y. grant of Middlesex.	1777
Strafford	N.H. grant Aug. 12, 1761.	1768
Thetford	N.H. grant Aug. 12, 1761.	1764
Topsham	N.H. grant Aug. 17, 1763, confirmed by N.Y. June 12, 1776.	1781
Tunbridge	N.H. grant Sept. 3, 1761.	1776
Vershire	Vermont grant Aug. 3, 1781.	1779
Washington	Vermont grant Aug. 8, 1781.	1782
Williamstown	Vermont grant Aug. 9, 1781.	1784

References for TABLE I:

* Index to the Papers of the Surveyors-General. (Vol. I of the State Papers of Vermont. Rutland, 1918), towns arranged alphabetically on several pages.

** Abby M. Hemenway (ed.), The Vermont Historical Gazetteer, Vol. II, (Burlington, 1871), dates given for each town on a different page.

1761 to 1764. Nearly all of the Vermont grants were made in 1781, immediately after the Revolutionary War. Settlement on the New Hampshire grants, except in the case of Newbury, did not take place until three to eight years after the date of the grant; on the Vermont grants, except in Randolph and Bradford, settlement was not accomplished until one to twelve years after the date of the grant. This time lapse between grant and settlement indicates that these lands were either being held for speculation or that more desirable lands elsewhere were being settled first.

The French and Indian Wars influenced settlement in Orange County; many soldiers who had traveled through the area returned to settle there. The governors of the several colonies were authorized by the King's proclamation of October 7, 1763, to issue military grants, "without fee or reward" to the reduced officers and discharged soldiers of the regular army who had served in the French and Indian Wars. Many soldiers sold their grants to New York City speculators. Thus the war promoted grants to both settlers and speculators.[15]

The best documented record of the operation of the proprietary system in Orange County exists for the town of Newbury.[16] This town, the first in Orange County, was granted by New Hampshire in 1763, to Col. Jacob Bailey of Newbury, Massachusetts, for services in the French and Indian Wars. He

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[15]Hall, op. cit., (1870), p. 148-149.

[16]Wells, op. cit., (1902), p. 36-40.

started settlement there immediately, bringing settlers and the town name from Newbury, Massachusetts. The town was divided by terms of the charter into eighty-one shares. The usual four shares for public use were reserved; also two shares, totaling 500 acres, were retained by the Governor (for speculation), and now comprise the village of Wells River. The proprietors carried out their prescribed functions of land division and tax raising. Newbury was divided, as in the old system in Massachusetts, into meadow lots, house lots, and "fifty" acre back lots, as seen on Map 18. The 160 lots on the west of the map are 100 acres each. The owner of each share was entitled to a meadow lot, appended by a house lot and upland and two of the 100 acre lots; also an equal share of what was still undivided.

Of seventy-five persons whose names were on the charter, forty never settled here but held their land for speculation; most Orange County towns had very few or no charter members settled in them.[17] Newbury, a town settled by a close community of Massachusetts emigrants, represents the proprietary system in transition; the fragmented division of land is typical of the seventeenth century and was not generally practiced in Orange County, while the lack of settlement by chartered members is characteristic of the eighteenth century deterioration of the system.

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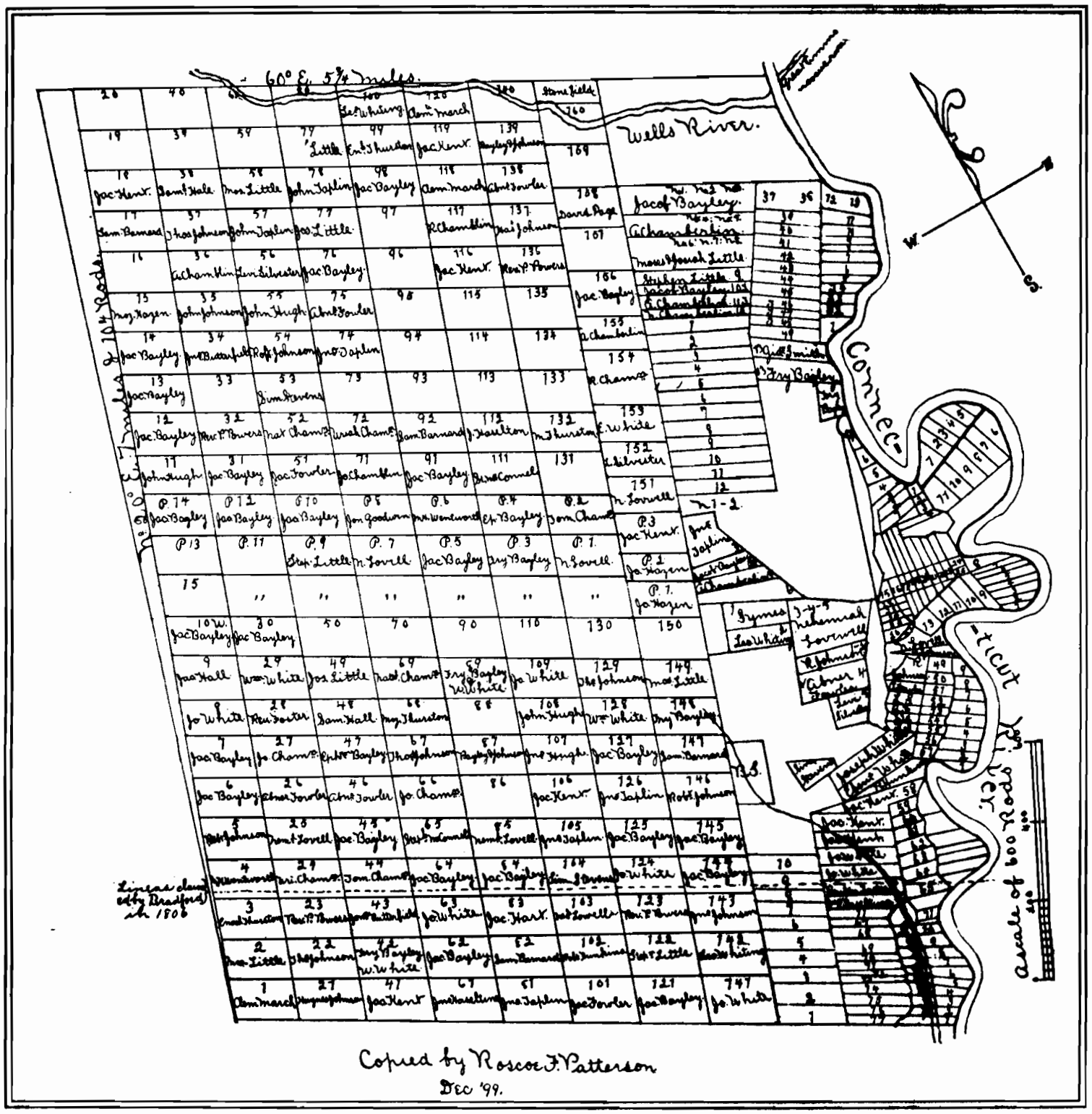
[17]Mrs. W. Slade, "Thetford of the Grants", (Annual Report, town of Thetford, Vermont, for the year ending Feb. 1, 1941. Thetford, 1941), p. 3, points out that of the 62 proprietors of Thetford, 51 of whom were from Hebron, Conn., only one settled in Thetford, "... founding of Thetford was a land speculation."



WHITING'S MAP OF NEWBURY.

Showing the whole town except Whiting's Gore, or the "Half-mile Strip." Made by Benjamin Whiting, 1769.

MAP 18

Photostat from F.P. Wells, History of Newbury, Vermont, (St. Johnsbury, 1902), p. 36.

III. THE SETTLERS: THEIR SOURCE AND REASONS FOR MOVING TO ORANGE COUNTY

Orange County was settled wholly by people of English, Irish, and Scottish ancestry who had originally resided in other American colonies. The majority came from Massachusetts and Connecticut; the rest from New Hampshire, New York and Maine. As was the general practice in New England, many new settlements were in the form of community movements, especially to Connecticut River towns, as in the case of Newbury and Thetford (from Newbury, Mass. and Hebron, Conn.).

Before 1760, settlement in New England was confined to Massachusetts, Connecticut, Rhode Island, southern New Hampshire, and coastal Maine (see Map 19). After 1760, when the Indian menace was minimized, population pressure expelled settlers from southern New England. Because of New York's system of manorial, feudal farms on the Hudson River valley, the flow of migration was channeled northward into New Hampshire and Vermont[18] (see Map 22, area settled 1760-1790). New York's land policies and its allegiance to the Crown prevented westward movement, at least until after the Revolutionary War; therefore Vermont was settled by frontier farmers even though it was marginal agricultural land.

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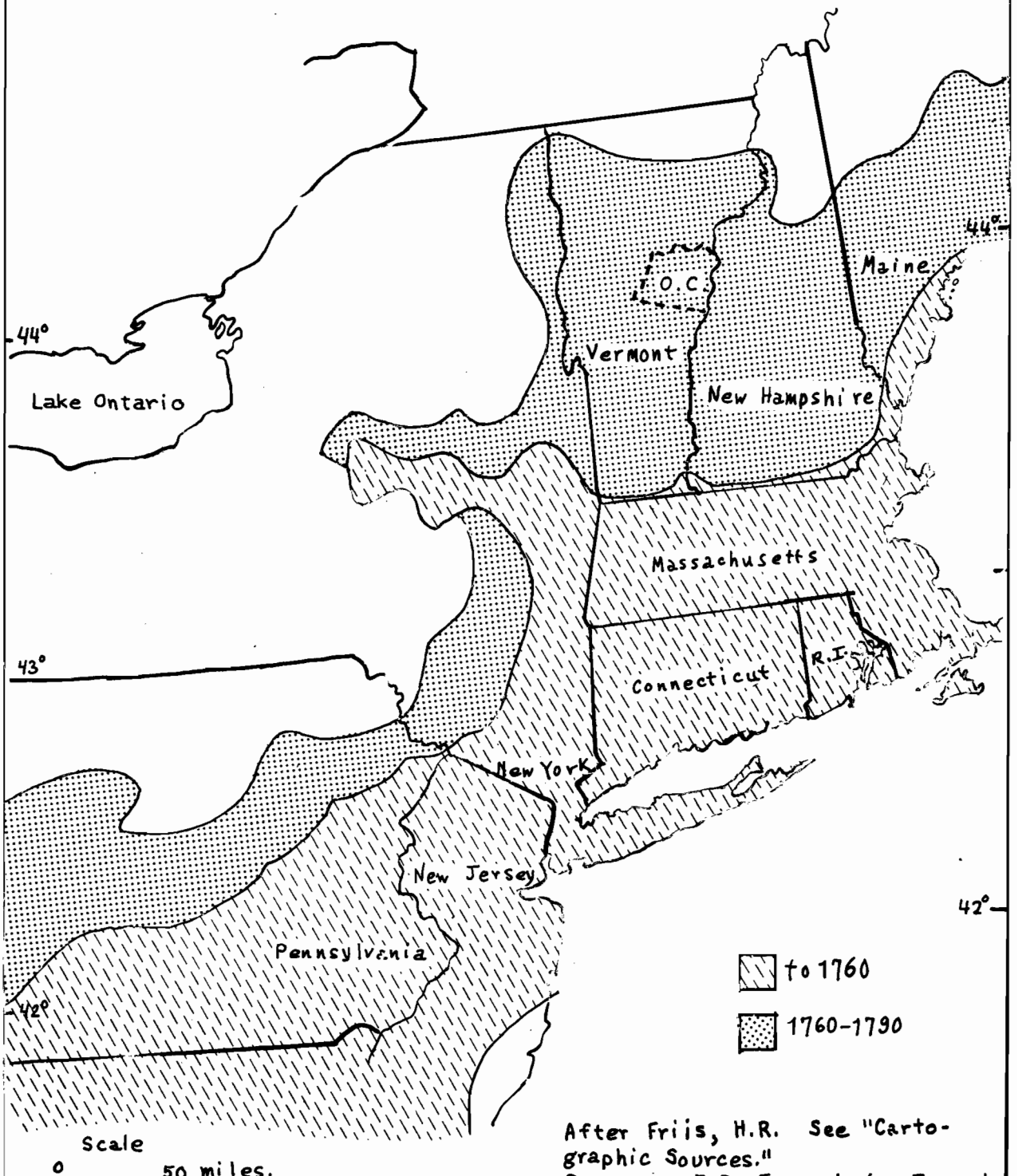
[18]Ray Allen Billington, Westward Expansion; a History of the American Frontier, (New York, 1949), p. 95.

EXTENT OF SETTLEMENT, 1760 and 1790,

NORTHEASTERN COAST OF UNITED STATES



After Friis, H.R. See "Cartographic Sources."
Base map: E.B. Espenshade, Jr., ed. Goode's World Atlas, p. 84-85.

MAP 19

Other less important reasons for emigration from southern New England included monetary difficulties and a desire for more religious freedom. Many farmers in Connecticut and Massachusetts, faced with debts after the wars concluded in 1763 and 1783, moved to Vermont where there were no taxes or war debts previous to 1791. Land was cheap, attractive, and apparently fertile in Vermont. Religious motives were still driving some people out of the older settled areas. Goodrich says, "In many cases they were influenced by religious considerations, i. e. by the disadvantages, legal and social, under which the laws had placed them."[19] Baptists came before 1790 to escape Congregational taxes levied in Massachusetts. Although two out of every sixty to seventy shares in each Vermont grant were reserved for the use of the Episcopal Church and minister, it is doubtful whether the Church usually claimed its right since by 1850 there was only one Episcopal Church in Orange County.[20] Religion was rarely the sole motive for movement to Vermont. According to Newton, the most important stimulus to settlement was land hunger ..."In occasional instances, also men were still seeking religious freedom - freedom from New England's established Congregational Church and its pious but tyrannical clergy."[21]

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[19] John E. Goodrich, "Immigration to Vermont", Collections of the Vermont Historical Society, 5 (Essays in the Social and Economic History of Vermont, 1943), p. 83.

[20] In 1850 there were 21 Congregational, 14 Baptist, and 13 Methodist Churches in Orange County. United States Bureau of the Census, Seventh Census of the United States: 1850, (Washington, 1853), p. 44-45.

[21] Newton, op. cit., (1949), p. 38.

IV. INITIAL SETTLEMENT: 1760 - 1790

Although immigration only began in 1762, by 1790, when the first U.S. census was taken, 10,256 people lived in Orange County. This large number was made up of immigrants augmented by a large natural increase; nearly half of the population was under sixteen years of age.

Transportation Into Orange County

The Connecticut River and its tributaries formed the natural transportation network leading from southern New England into eastern Vermont. The immigrants used various types of boats, including the Indian canoe and bateau, rafts, dugouts, sailboats, and flatboats, portaging around the numerous falls. Many came in winter over the frozen rivers on skates, sleds, and sleighs pulled by dogs, horses, and oxen. Others came on foot along Indian trails in the stream valleys; some of these trails were widened to accomodate horse-back riders and carts or sleds drawn by dogs or oxen.

Types Of Sites Chosen

Most of the earliest settlements were located in the stream valleys, as illustrated on Map 21, page 81 . Some settlers were attracted to the relatively fertile alluvial soils; others were attracted by the abundance of fish which provided an easy diet staple prior to the breaking of the land; and the

enterprising few who planned to build saw or grist mills sought locations on stream rapids which often grew into town centers.

The tendency of many others to prefer settlement on areas of higher elevation away from the streams is significant in view of the later mass emigration from the county. Numerous reasons are given for this phenomenon:

1. The unfounded but understandable fear of further Indian raids lead people to the high spots off the routes of Indian warpaths where they thought they could best sight the enemy and defend themselves.
2. The higher land with lighter forests and drier soils seemed easier to clear than the dense vegetation of stream valleys.[22]
3. The fine hardwood forests, found mainly in upland areas, provided very useful building material.[23]
4. It seems significant that eastern Vermont was settled mainly from eastern Connecticut, " ... especially from the upland area in the vicinity of Lebanon, Hebron, Mansfield, Coventry, and Canterbury .."[24] Possibly this was a case of man's natural tendency to settle on familiar landscape in a new area when presented with the alternative of a hill or valley site.

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[22]Lamson, op. cit., (1943), p. 81.

[23]Ibid., p. 114.

[24]Lewis D. Stilwell, Migration from Vermont, (Montpelier, 1948), p. 75.

The largely self-sufficient pioneer farmers were not concerned with the difficulties of transporting goods or passengers from farms in such inaccessible locations. Numerous crude local highways had developed along with settlement after 1760; by 1791 roads of some description followed the Connecticut River, the White River, and the Third Branch of the White River, with some connections to interior Orange County (see Map 20). But it was not until the railroad came to the White and Connecticut River valleys in 1849, stimulating commercial agriculture, that it became really obvious that the settlements on the uplands were impracticable and that movement of goods into and out from them over more than local distances was nearly impossible.

Frontier Economy

The people who settled Orange County were mainly farmers of some experience from rural agricultural areas of southern New England. In Orange County they continued the farming practices known to them, which, as recorded by Bidwell, were based largely on the methods of English farmers of the early seventeenth century.[25] Poor cultivation, inadequate fertilizer, rough implements, neglected livestock, and lack of rotation resulted in land exhaustion. These methods may be attributed to ignorance, conservatism, the high price of labor,

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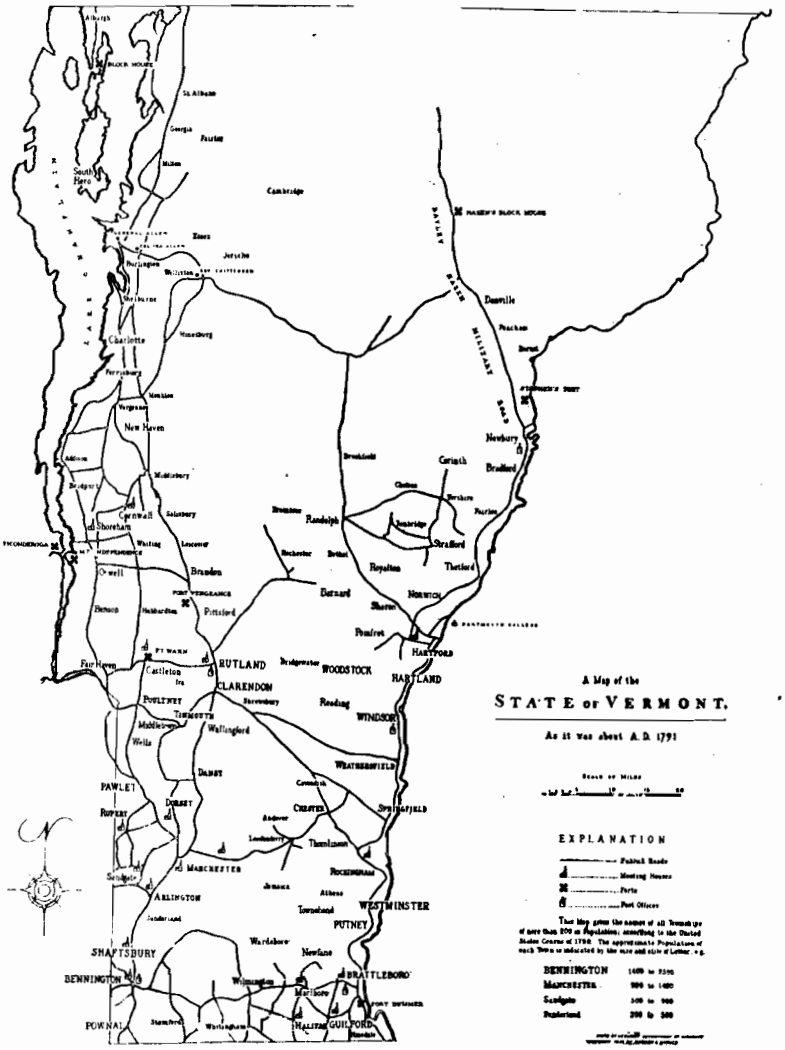
[25]Percy Wells Bidwell, "Rural Economy in New England at the Beginning of the Nineteenth Century", Transactions of the Connecticut Academy of Arts and Sciences, 20 (April, 1916), p. 319.

VERMONT HIGHWAYS, 1791*



*Photostat from Earle Newton, The Vermont Story, (Montpelier, 1949), p. 93.

MAP 20

and the availability of cheap land for new farms. The lack of a market may have prevented progress.[26] Later less land was cultivated and the quality and variety of crops were improved. The poor quality of many of the farms was a handicap; the often hilly, rocky, and swampy land was unsuited for progressive methods of agriculture. This self-sufficient economy, in which each household or town provided all of its own needs, reached the high point of its development around 1800.[27]

Settlement Expansion And Distribution

Settlement expanded westward from the Connecticut River valley to interior Orange County, as illustrated on Map 21.

Of the towns first settled between 1760 and 1770, Newbury, Bradford, Fairlee, and Thetford were located along the Connecticut River and Strafford was on its southernmost tributary in the county, the Ompompanoosuc River. Most of the first settlers chose the alluvial meadows along the Connecticut River, while others settled mill sites on Wells River in Newbury, Wait's River in Bradford, Ompompanoosuc River in Thetford, and Old City Brook (a tributary of Ompompanoosuc River) in Strafford; still other newcomers favored the 1,300 - 1,600 foot plateau in Fairlee and the 900 - 1,100 foot plateau in Thetford (see Map 21).

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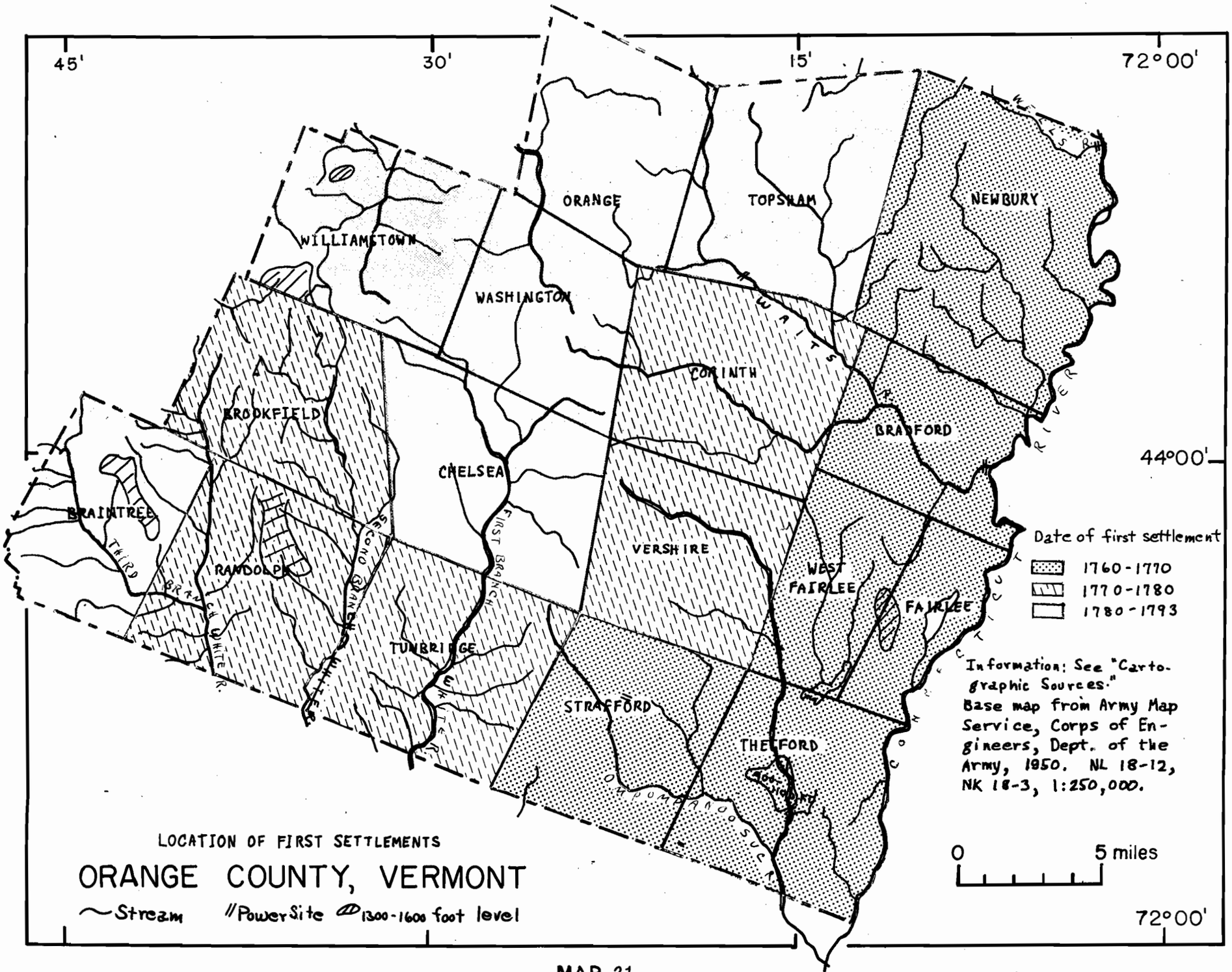
[26] Ibid., p. 346.

[27] Ibid., p. 245.



LOCATION OF FIRST SETTLEMENTS

ORANGE COUNTY, VERMONT

~ Stream // Power Site 1300-1600 foot level

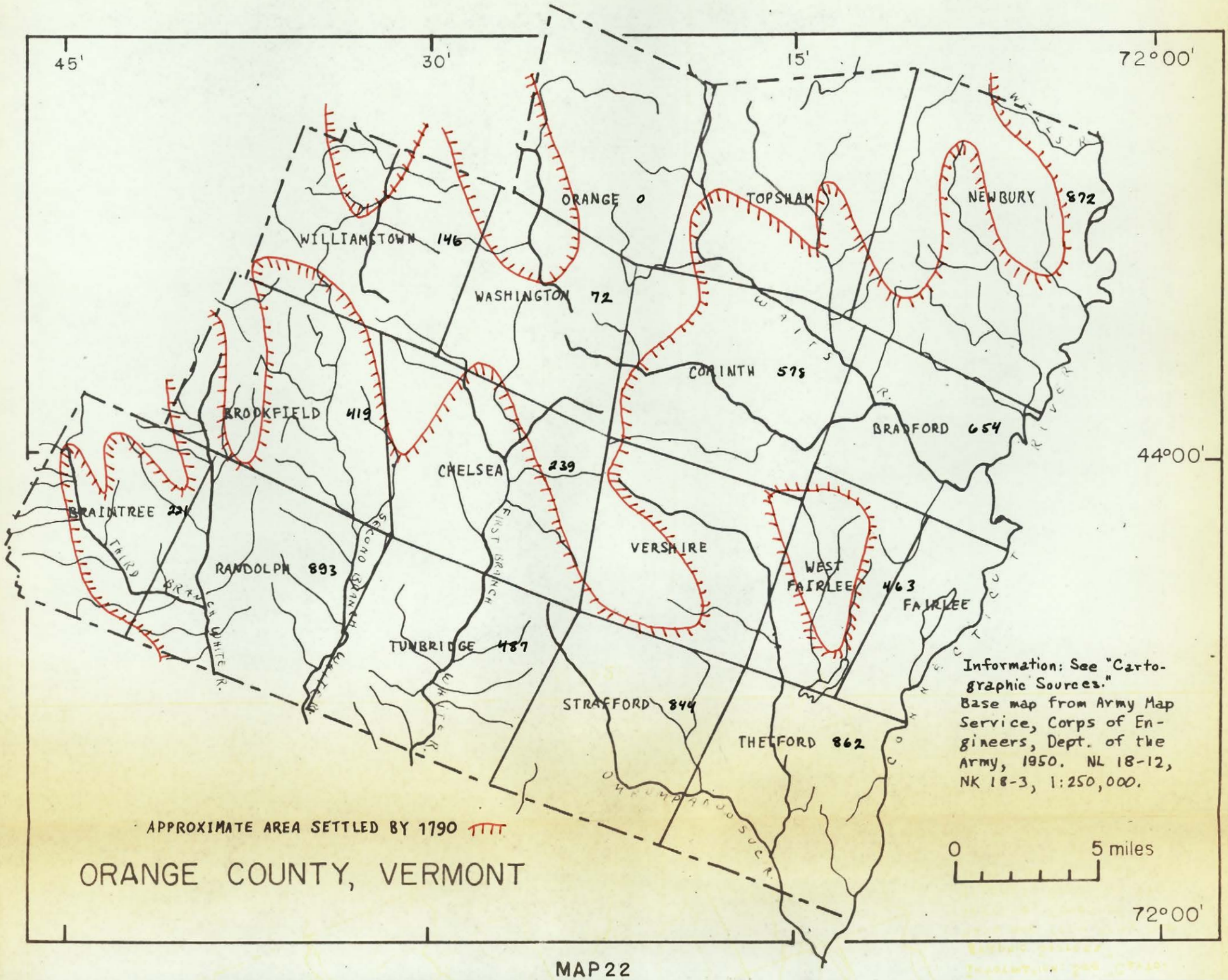
MAP 21

From 1770 to 1780 settlement extended into the wilderness from established towns as Connecticut River tributaries were followed further inland. Corinth was settled on Cookville Brook and South Branch of Wait's River, Vershire on the Ompompanoosuc River, Tunbridge on the First Branch of White River, Brookfield on the Second Branch, and Randolph on the Third Branch. Much of the land settled in Strafford, Randolph, Vershire, Corinth, and Newbury was on the 1,300-1,600 foot plateau away from the streams. Randolph Center on this level was for a long time the principal settlement in that town.

The years 1780 to 1790 witnessed further extension of settlement up White River tributaries: Chelsea on the First Branch and Braintree on the Third Branch. Williamstown and Washington were on the north side of the height of land, on the Stevens and Jail Branches of Winooski River respectively. Topsham began on Wait's River, a Connecticut tributary, and the town of Orange was the last settled, in 1793, on its southern border. Land in all of these towns was settled at the 1,300-1,600 foot level.

Thus, settlement had by 1790 spread up the major river valleys and on to the 1,300-1,600 foot plateau. Map 22 shows the approximate area of settlement and the population of each town in 1790.

The form of settlement was influenced by the economy. Since the economic unit was the individual farm, or at most encompassed the closest village where the


45'
30'
15'
72°00'
44°00'
ORANGE 0
TOPSHAM
NEWBURY 872
WILLIAMSTOWN 146
WASHINGTON 72
CORINTH 575
BRADFORD 654
BROOKFIELD 419
CHELSEA 239
BRAINTREE 221
RANDOLPH 893
VERSHIRE
WEST FAIRLEE 463
FAIRLEE
TUNBRIDGE 487
STRAFFORD 844
THETFORD 862
WHITE R.
THIRD BRANCH
SECOND BRANCH
FIRST BRANCH
WELLS R.
CONNECTICUT R.
OMPOMPANOOSUC R.
APPROXIMATE AREA SETTLED BY 1790
ORANGE COUNTY, VERMONT
0
5 miles
Information: See "Cartographic Sources."
Base map from Army Map Service, Corps of Engineers, Dept. of the Army, 1950. NL 18-12, NK 18-3, 1:250,000.

MAP 22

occasionally needed miller or tanner operated, settlement form was characterized by dispersed farmsteads and scattered rural hamlets. The contemporary practice of granting lands in single plots had eliminated the compact village type of settlement in seventeenth century Massachusetts where each settler's house lot was in the village with farm plots located on the outskirts.

By 1800 all the towns had been settled and the population had increased to 16,318. The size of the various towns reflected its age and marginality; of towns of 900 or more people, all had been settled between 1760 and 1780; towns with less than 900 inhabitants had been settled later from 1780 to 1800.

Chapter V

POPULATION CLIMAX: 1840

From 1790 to 1840 the population of Orange County continued to grow; in fifty years it increased 164 per cent from 10,256 to 27,873. Until 1810 the economy remained largely self-sufficient with each village supplying its own needs, but by 1810 the transition to commercial agriculture was underway, culminating in the highly successful sheep industry. During this prosperous period the county attained the highest population in its history.

The Transition To Commercial Agriculture

The early farmers practiced mixed farming; wheat, corn, potatoes and hay were raised. Game was the chief source of meat until enough livestock was supplied; then cattle, sheep, and swine were kept, along with horses. Vegetable gardens were cultivated to supply family needs, and surplus maple sugar provided a cash crop. Table II shows agricultural production for 1840. The large potato harvest and the high ratio of potatoes to grain are indicative of the marginal nature of the land; potatoes gave high yields, but grain did not after the initial fertility of the soil was exhausted. Potatoes were used for feed, seed, liquor manufacture, and human consumption. Starch was being manufactured from potatoes, with Orange and Tunbridge reporting factories in Waltons' Vermont

TABLE II

AGRICULTURAL PRODUCTION, ORANGE COUNTY, 1840*

Crops	Amount	Livestock	Number
Wheat	69,129 bushels	Horses	6,674
Corn	120,698 bushels	Cattle	35,853
Potatoes	1,145,364 bushels	Swine	22,716
Hay	72,771 tons	Sheep	156,045
Maple Sugar	419,413 lbs.		

* John Hayward, Gazetteer of Vermont, (Boston, 1849), compiled from statistics for each town.

Register and Farmer's Almanac for 1845, and Randolph, with nearly ten per cent of the county's potatoes, having two more.[1] Other livestock was being neglected in favor of sheep.

Even before 1810, the date given by Bidwell[2] for the beginning of the transition to commercial agriculture, farm surpluses were used as cash exports. Potash, made by boiling and leaching ashes of surplus hardwood timber, was the first such export; later wheat was a large cash crop.[3] The variety of exports gradually increased to include such additional items as wool fleece and cloth, linseed and flaxseed oil, butter, cheese, maple sugar and syrup, livestock, dressed meat, lumber products, ginseng (an aromatic herb used medicinally in China), and copperas (ferrous sulfate, a green crystalline compound used in dyeing and making of ink). Imports included salt, rum, iron, dry goods and heavy merchandise.

Livestock was driven to market on foot, and lumber was rafted down the Connecticut River system. The other products reached the numerous market cities over crudely developed transport routes. The overland system consisted of poorly built and maintained roads (see Map 23 and Map 20, page 79) which could be used by ox-carts. Beginning in 1799, thirty toll-road turnpikes and plankroad companies operated in Vermont; eventually these reverted to town

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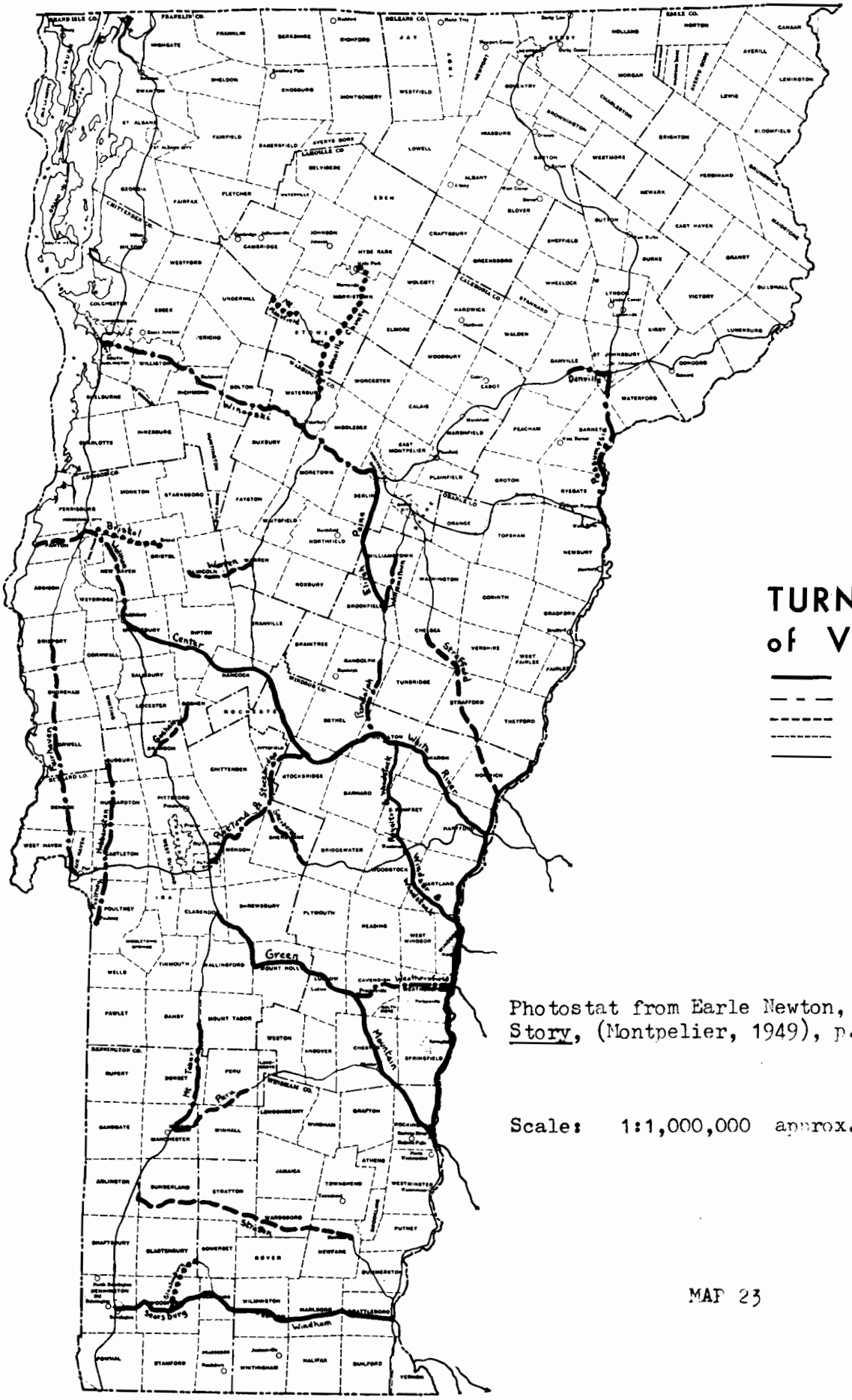
[1] Randolph produced 112,598 bushels of Orange County's 1,145,364 bushels of potatoes.

[2] Bidwell, op. cit., (April, 1916), p. 245.

[3] Lamson, op. cit., (1943), p. 82-83.



Photostat from Earle Newton, The Vermont Story, (Montpelier, 1949), p. 128.

Scale: 1:1,000,000 approx.

MAP 23

ownership.[4] Toll bridges were built over the Connecticut River to New Hampshire turnpikes; in 1805 Wells River was thus connected to Haverhill, N. H. In 1820, a market road was laid out from Wells River village north to Montreal and a storage warehouse was built at Wells River to accomodate the thriving trade. Markets in Portland, Portsmouth, Boston, Albany, and Montreal were reached by a combination of overland and water routes. Canals were built around falls on the Connecticut River facilitating navigation from Wells River southward to Long Island Sound. Rafts and flatboats were used to transport products to Hartford, Springfield, New Haven, and New York. As early as 1800, fourteen flat-bottomed boats carrying ten to twenty tons each made nine trips per season down the Connecticut River.[5] In 1831 a complete steam-boat service opened from Wells River to Hartford; the company failed at the end of the first season due to high tolls and freight rates.[6] Thus the transportation system, upon which commercial development depended, was poorly planned and inefficient from the beginning.

The Sheep Industry

In 1840, the peak population in Orange County was reached, concurrently

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[4]William J. Wilgus, The Role of Transportation in the Development of Vermont, (Montpelier, 1945), p. 56.

[5]Percy Wells Bidwell and J. I. Falconer, History of Agriculture in the Northern United States, 1620-1860, (Washington, 1925), p. 141.

[6]Stilwell, op. cit., (1948), p. 156.

with the most successful years of sheep farming and the wool industry. During the period of transition to commercial agriculture, sheep raising was the first large scale specialized agricultural activity to be attempted in the county. The economic success of this effort was due in part to the War of 1812 and the decline of Vermont wheat production.

During the 1812 war between England and the United States, the supply of wool which the U.S. usually imported from England was cut off; the resultant wool shortage encouraged development of a domestic wool industry,[7] which prospered even after the war with high tariff protection.

Production of wheat, the original cash crop of Vermont, declined drastically due to lack of fertilization and recurrent disease and pests. It then seemed that wool would provide the best cash crop since the rocky hill country pastures were better adapted to raising sheep than grain.[8]

Farm sizes increased to meet the demands of pastoralism; many farmers sold out to their adjoining neighbors and left Vermont. Other livestock was neglected (see Figure 4). Sheep became the major cash crop; nearly every town in Vermont had over 1,000 sheep in 1840.[9] All towns in Orange County, except Fairlee, had over 5,000; seven towns had over 10,000 (see Figure 4).

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[7]Janet Mabie, Neither Wealth nor Poverty, (Montpelier, 1944).

[8]Stilwell, op. cit., (1948), p. 158.

[9]Harold Fisher Wilson, The Hill Country of Northern New England, (New York, 1936), p. 78.

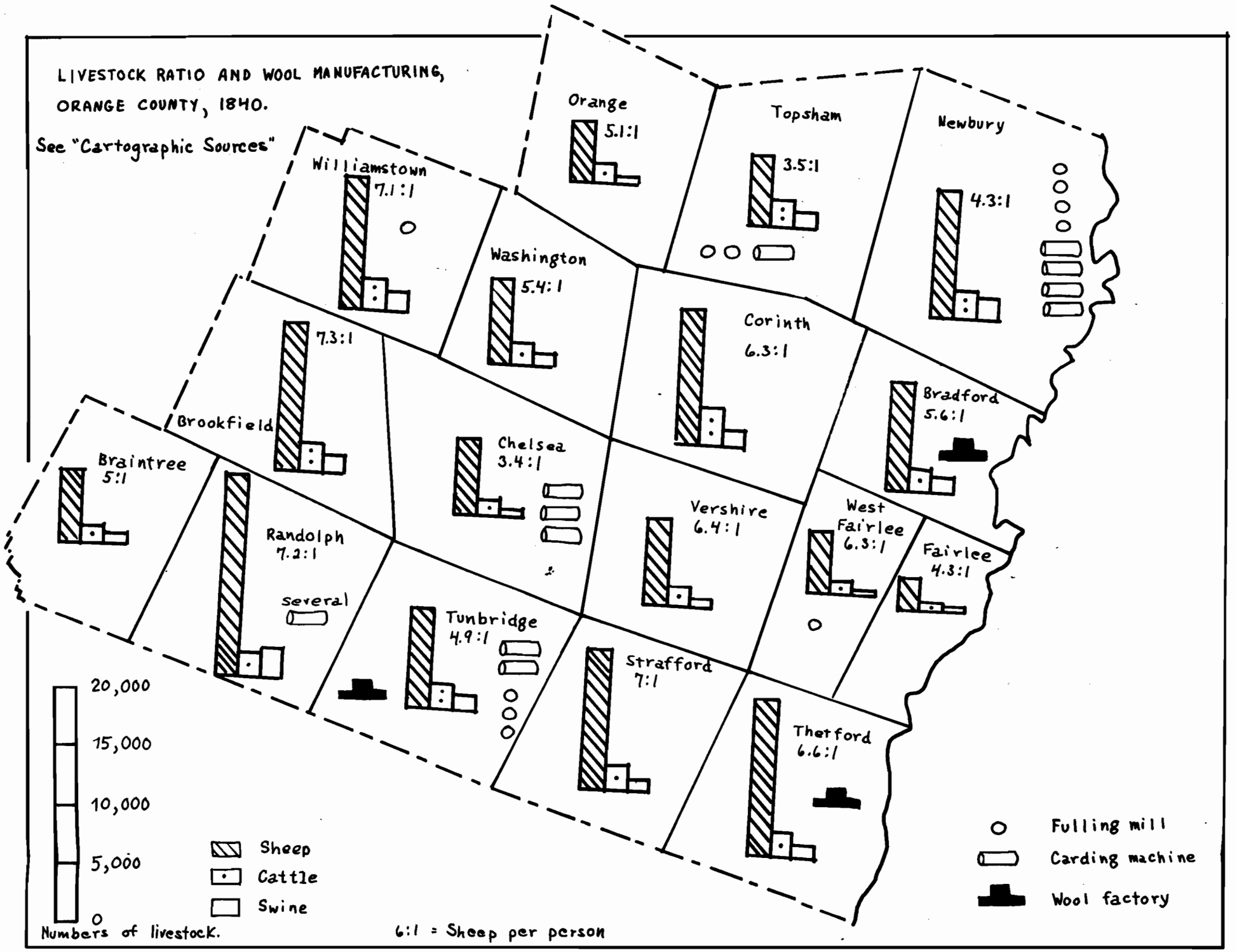
LIVESTOCK RATIO AND WOOL MANUFACTURING, ORANGE COUNTY, 1840.
See "Cartographic Sources"
Orange
5.1:1
Topsham
3.5:1
Newbury
4.3:1
Williamstown
7.1:1
Washington
5.4:1
Corinth
6.3:1
Bradford
5.6:1
7.3:1
Brookfield
Braintree
5:1
Chelsea
3.4:1
Randolph
7.2:1
several
Vershire
6.4:1
West Fairlee
6.3:1
Fairlee
4.3:1
Tunbridge
4.9:1
Strafford
7:1
Thetford
6.6:1
20,000
15,000
10,000
5,000
0
Numbers of livestock.
Sheep
Cattle
Swine
6:1 = Sheep per person
Fulling mill
Carding machine
Wool factory

FIG. 4

The county total was 156,043, nearly ten per cent of the state total of 1,681,817. The sheep to human ratio went up to nearly six to one.

The total number of sheep per town, and the high proportion of sheep to cattle and swine, may be seen on Figure 4. Seven towns had over 10,000 sheep each. Of these towns, Randolph, Brookfield, and Williamstown are located predominantly on the good grazing lands of the 1,300-1,600 foot plateau (see Fold Map 1). Thetford and Newbury provided good grazing on the Connecticut River meadows; also both were in good positions for transporting the products of their carding machines, fulling mills, and wool factory. Strafford and Corinth had good upland grazing areas.

The sheep to human ratio (see Figure 4, page 91), in some cases seems indicative of the importance of sheep raising in the town's economy. Small ratios probably indicate that a large part of the population was making its living by some other means. Of those towns with a ratio of over six sheep to one human, the predominant occupation seems to have been pastoral farming in Brookfield, Williamstown, Corinth, Vershire, Strafford, Thetford, and West Fairlee. There is no documented evidence of other large scale economic activity in these towns. Williamstown and West Fairlee each had a fulling mill, and Thetford a small woolen factory. In other towns with a ratio over six to one there is evidence of other economic activity.[10] Bradford was a minor manufacturing center, with a cast iron furnace, whetstone factories,

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[10]Hayward, op. cit., (1849), compiled from statistics for each town.

machine shops, a paper mill, and a woolen factory. Randolph, besides being the leading agricultural town in the county, was the location of one oil mill, five grist mills, nine sawmills, five tanneries, two furnaces, two starch factories, several carding machines, and a clothier's works.[11]

Several towns with a low sheep to human ratio were small manufacturing centers: Newbury, Chelsea, and Tunbridge, besides having other small manufacturing outfits, played a leading role in the wool-processing industry; in the case of Chelsea and Tunbridge, the low number of sheep in the town, and the large number in the immediately surrounding towns, indicates that the raw wool was transported from the towns with good grazing areas to these towns with good mill and transportation situations on the First Branch of White River.

Much wool processing was done in the county. There were thirteen or more carding machines, eleven fulling mills, three wool factories, and two clothier's establishments. Figure 4, page 91, shows locations of these. Nearly 100 small wool factories were operating in Vermont from 1830-1840.[12] In 1830, the total clip of Vermont sold for about $ 1,000,000, mainly to the mills of southern New England. The price of wool in 1827 was thirty-six cents a pound; in 1835 it was fifty-seven cents a pound.[13]

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[11]Full discussion of manufacturing at this time appears with the discussion of the rise of small manufacturing, Chapter VI, pages 114-119.

[12]Stilwell, op. cit., (1948), p. 172.

[13]Wilson, op.cit., (1936), p. 76-77.

Table III depicts the drastic decline in the sheep industry which was in progress by 1850. From 1840 to 1880, the number of sheep in Vermont declined steadily; by 1850 there were forty per cent fewer sheep than in 1840. During this decade the greatest decline in numbers of sheep in Orange County also occurred; the number decreased by over half. However, the number of pounds of wool decreased much less drastically due to the increased quality of the sheep and the consequent increase in the average weight of wool per head. Nevertheless, the market value of wool was declining. In 1841 and 1846 reductions in the protective tariff on wool caused a price drop to twenty-five cents a pound.[14] The gradual increase of wool production in the West, combined with good transportation facilities, enlarged the supply of wool for eastern markets and depressed the price in the late 1840's. Sheep raising in Orange County underwent a revival in the 1860's due to the increased market for woolen cloth to replace Southern cotton during the Civil War. The availability of cotton after the war caused another decline in the industry, but breeding of Merino sheep in Vermont kept sheep farming important in the '60's and '70's. From 1880 there was a more drastic decrease in the pounds of wool produced in Vermont; competition from cheap wool produced in the west was the major factor in this general decline. Foreign competition from Australia and South America lowered the world price, and by 1900 there were only 25,413 sheep left in Orange County. Illustration 8 shows some of the 759 sheep and lambs remaining

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[14]Newton, op. cit., (1949), p. 137.

TABLE III

DECLINE OF SHEEP INDUSTRY*

Year	Sheep in Vermont	Pounds of Wool	Average weight wool per head, in pounds	Sheep in Orange County**
1840	1,681,819	3,699,235	2.20	156,043
1850	1,014,122	3,400,717	3.35	71,551
1860	752,201	3,118,950	4.14	84,189
1870	580,347	3,102,137	5.37	77,816
1880	439,870	2,551,113**	5.80	71,742
1890	333,947	2,118,883**	6.34	43,640
1900	296,576	1,334,253**	4.50	25,413

* Wilson, op. cit., (1936), p. 78.

** Compiled from statistics in the Census of the United States for the respective years; full information on volumes and pages consulted may be found in Bibliography.

Illustration 8: Sheep farm in East Braintree, 1961.

in Orange County in 1960.

Maximum Population And Land Use[15]

In 1840 the maximum area of land in use in Orange County was probably attained since sheep farming, by the largest population in the county's history, occupied more land than any other agricultural activity before or after. Therefore, the majority of patterned land areas on Fold Map 2 were probably in use in 1840. Later specialized farming required use of more land per person, but the population had by then decreased and old farms were consolidated. Areas not shaded on Fold Map 2 were never used for crop or pasture land. High elevation, 1,900-2,200 feet, seems to account for the unsettled areas in southwest Braintree, eastern Orange, northern Topsham, and areas in Washington and Corinth; extreme relief seems to have prohibited settlement in most of the other unsettled areas (see Fold Map 1).

Sheep farming favored the later settled, upland areas. Randolph had become the largest town, with Newbury, Thetford, Corinth, and Chelsea following. Proximity to good river transportation seemed now to be a determining factor in size distribution: of the eleven towns with over 1,500 population, three were located on the Connecticut River; the others were on Wait's River, Ompompanoosuc River, and White River or their respective tributaries. Of the towns under 1,500, Braintree, Orange, Vershire, West Fairlee, and Washington had no good river

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[15]Refer to Fold Map 2 in pocket; additional information about the map is given on page 114.

transport. Fairlee touched the Connecticut River, but its small size and hilly interior limited the settled area to a narrow belt along the river.

The larger villages, located along the stream valleys near power sites and roads, were developing linear nucleations in the confines of the stream valleys.

Chapter VI

AGRICULTURAL DECLINE AND MASS EMIGRATION: 1840 - 1880

Since 1840, the population of Orange County has steadily declined through emigration and a decrease in the size of the average family (see Table IV). The large pioneer family, which had been an asset in the days of self-sufficient farming, became increasingly difficult to support with the decline of mixed farming. Major causes of mass emigration were the unfavorable location of the county in relation to the rapidly industrializing area of north-eastern United States, and its marginal agricultural possibilities in comparison to the western territories opened up for settlement in the nineteenth century and connected to eastern markets by railroad. People abandoned marginal lands to seek better opportunities in the cities or on western farms.

During these years of population decline, Orange County underwent a series of economic readjustments. Mixed, self-sufficient farming declined in favor of the production of specialized agricultural products which could be traded with industrial southern New England after railroad transport became available in Orange County (1849). Small scale manufacturing of specialized products increased with the improvement of transportation.

TABLE IV

POPULATION OF ORANGE COUNTY*

Town	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1930	1940	1950	1960
Bradford	1063	1302	1411	1507	1655	1723	1689	1492	1520	1429	1338	1235	1507	1551	1619
Braintree	531	850	1033	1209	1232	1228	1225	1066	1051	854	776	635	648	626	536
Brookfield	988	1384	1507	1677	1789	1672	1521	1269	1239	996	996	761	808	762	5 97
Chelsea	908	1327	1462	1953	1959	1958	1757	1526	1462	1230	1070	1004	1013	1025	957
Corinth	1400	1376	1907	1958	1970	1906	1627	1470	1627	1027	978	817	822	786	775
Fairlee				656	644	575	549	416	469	398	438	456	535	571	569
West Fairlee	777	983	1143	841	824	696	830	833	1038	561	531	405	428	363	333
Newbury	1304	1363	1623	2252	2578	2984	2549	2241	2316	2080	2125	1744	1723	1667	1452
Orange	348	686	751	1016	984	1007	936	733	731	589	598	508	482	410	430
Randolph	1841	2255	2487	2743	2678	2666	2502	2829	2910	3232	3141	3166	2778	3499	3414
Strafford	1642	1805	1921	1935	1762	1540	1506	1290	1181	932	1000	615	598	680	548

Town	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1930	1940	1950	1960
Thetford	1478	1735	1915	2113	2065	2016	1876	1613	1529	1287	1249	1052	1043	1046	1049
Topsham	344	814	1020	1384	1745	1668	1662	1418	1365	1187	1117	720	707	733	638
Tunbridge	1324	1640	2003	1920	1811	1786	1546	1405	1252	1011	885	903	882	774	743
Vershire	1031	1311	1290	1260	1198	1071	1054	1140	1875	754	641	368	367	284	236
Washington	500	1040	1160	1374	1359	1348	1249	1113	922	820	820	697	730	650	565
Williamstown	839	1353	1481	1487	1620	1452	1377	1236	1038	1188	1610	1608	1477	1600	1553
Total	16,318	21,224	24,681	27,285	27,873	27,296	25,455	23,090	23,525	19,575	19,313	16,694	16,546	17,027	16,014

* Vermont Register, compiled from statistics for each town, 1800–1900; Census of the United States for the years 1930–1960. See Bibliography for full information on volumes and pages consulted.

Effect Of The Railroad On The Economy Of Orange County

The coming of the railroad hastened the end of self-sufficient farming. By 1850 the railroad had brought cheaper agricultural products from the west to the east. The extension of the railroad into Orange County, stimulating trade with industrial southern New England, caused the economy to readjust so as to provide specialized agricultural and manufactured products.

The railroad came late to Vermont, in comparison to its development in southern New England in the first half of the nineteenth century, finally replacing the totally inadequate roads and vehicles drawn by horses or oxen. The Connecticut and Passumpsic Rivers Railroad, connecting White River Junction with Wells River, opened in 1848, the first through Orange County (see Illustration 9). The Boston and Maine Railroad Company later gained control over this important link between the U.S. and Canada.

By 1851, railroad service was established from Boston via Vermont to Ogdensburgh, N.Y., the foot of navigation of the Great Lakes. The Central Vermont Railroad from Windsor, Vermont to the Canadian border by way of the White and Winooski Rivers, was opened between 1848 and 1864; it passed through southwestern Orange County (see Maps 24 and 25). Connections to the west were made through Canada, causing the disadvantages of a different gauge, transshipment, and lost time. Therefore, Vermont was allowed to charge lower rates than other states on certain freight, giving rise to the term "differential".[1]

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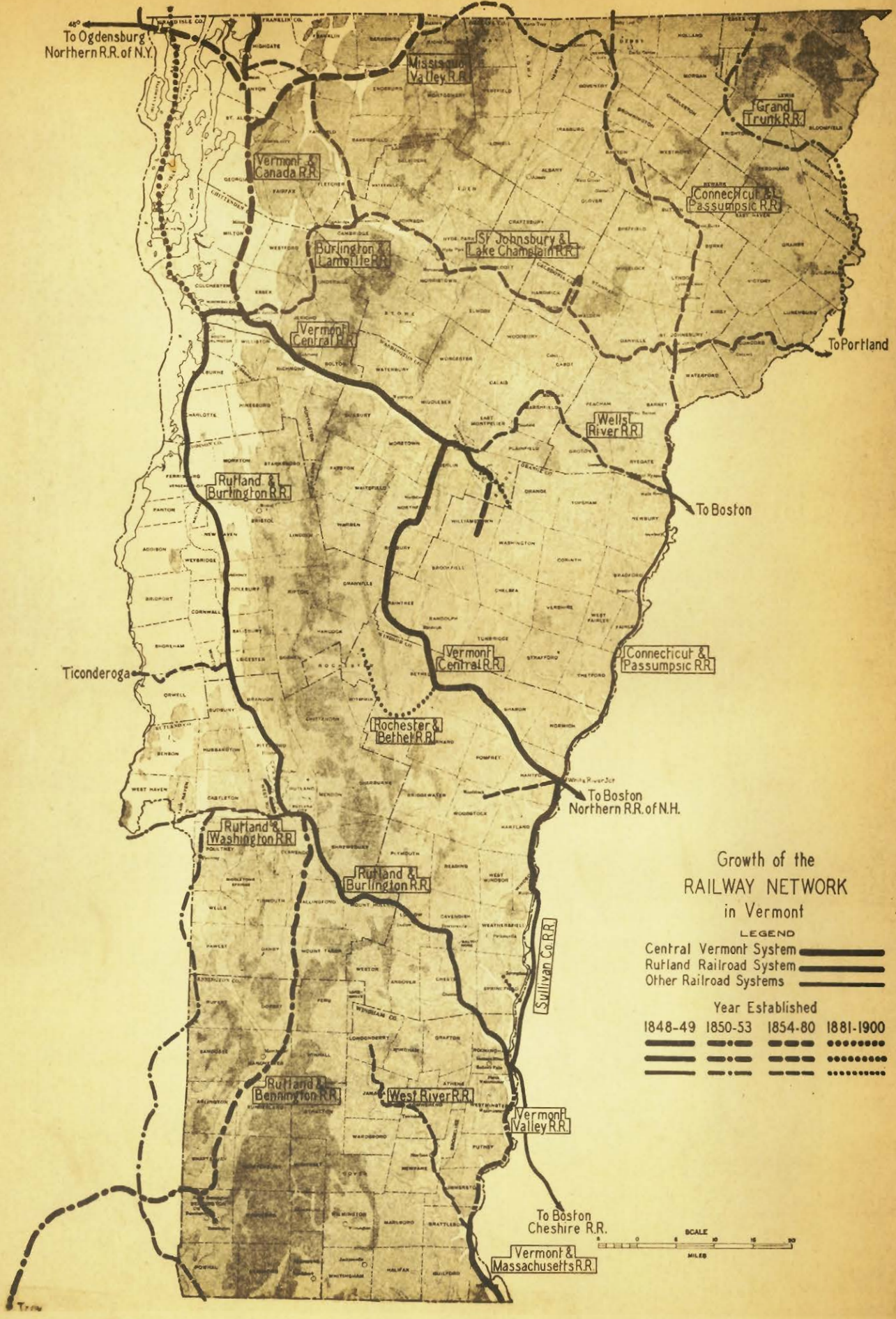
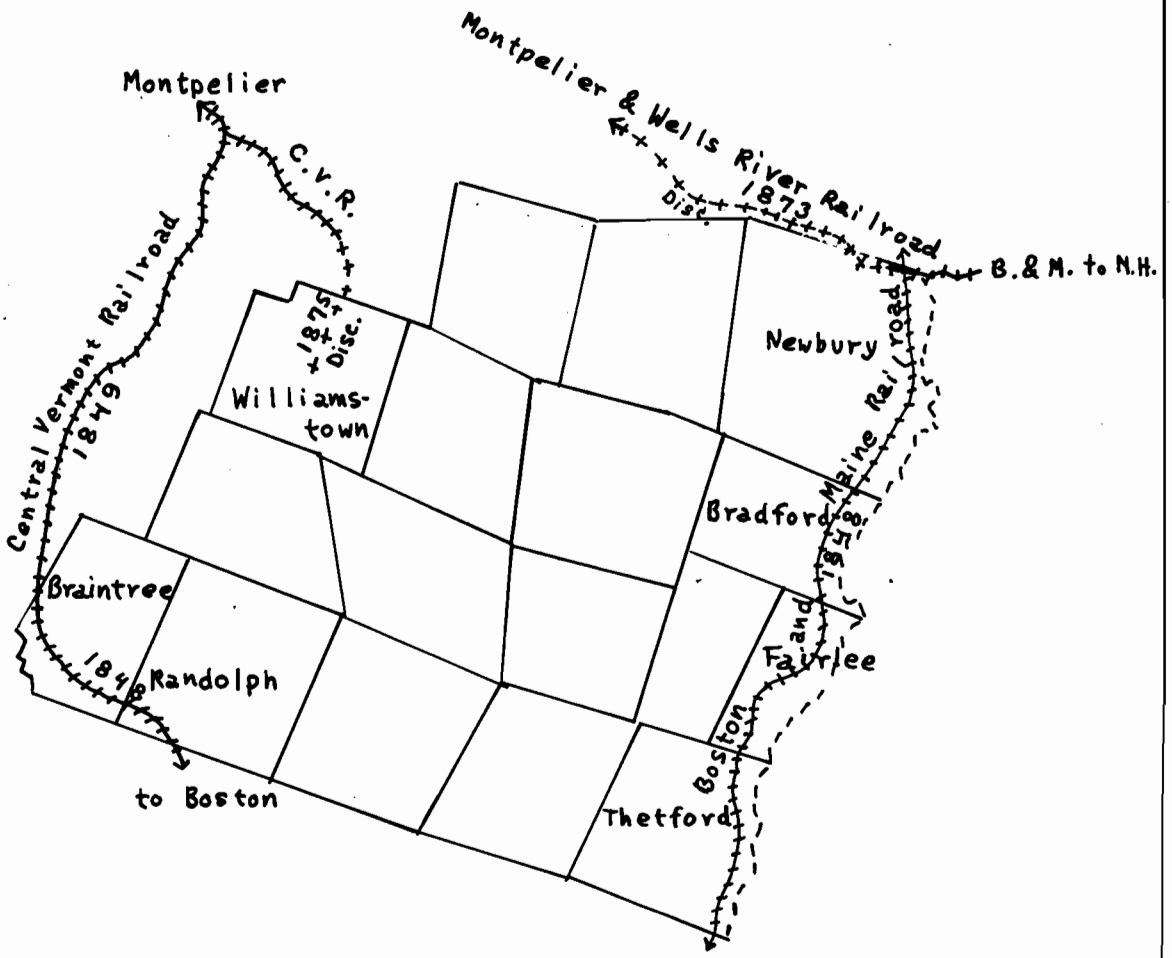
[1] Wilgus, op. cit., (1936), p. 66.



MAP 24 Photostat from Earle Newton, The Vermont Story, (Montpelier, 1949), p. 142.

RAILROADS, ORANGE COUNTY, 1960



+ + + + = Discontinued.

Base map: Vermont State Planning Board, 1939.

0 5 10

MAP 25

Although this policy attracted business, the rates were ruinously low for the railroads.

The Montpelier and Wells River Railroad was chartered in 1849 and 1867 and opened in 1873 (see Map 25). In 1877 financial failure led to reorganization and control by a subsidiary of the Boston and Maine.[2] This railroad is now in ruins (see Illustrations 10 and 11) and an employee of the Boston and Maine Railroad Company at Wells River village, formerly the important junction of the Montpelier and Wells River Railroad with the Boston and Maine Railroad, told the writer in 1960 that it had been abandoned for "ten or fifteen" years. The main offices and business were transferred before 1937 to Woodsville, N. H., across the river.[3]

The Barre-Williamstown railroad, built in 1875 in connection with the granite industry, is long abandoned (see Illustration 12).

Vermont's railroads functioned as a bridge for inter-regional communication between the U.S. and Canada. The Canadian National Railroad, through ownership of the Central Vermont and Grand Trunk railways, and the Canadian Pacific Railroad, by leasing a portion of the Boston and Maine system, gained access to New England's warm water ports. The intra-state nature of most of the railroad traffic is reflected in the abandonment of many small connecting

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[2] Ibid., p. 77.

[3] Works Projects Administration, Federal Writers Project for the State of Vermont, A Guide to the Green Mountain State, (Boston, 1937), p. 176.

Illustration 9: The Boston and Maine Railroad, Connecticut River valley, near former junction with Montpelier and Wells River Railroad, Wells River village, Newbury.

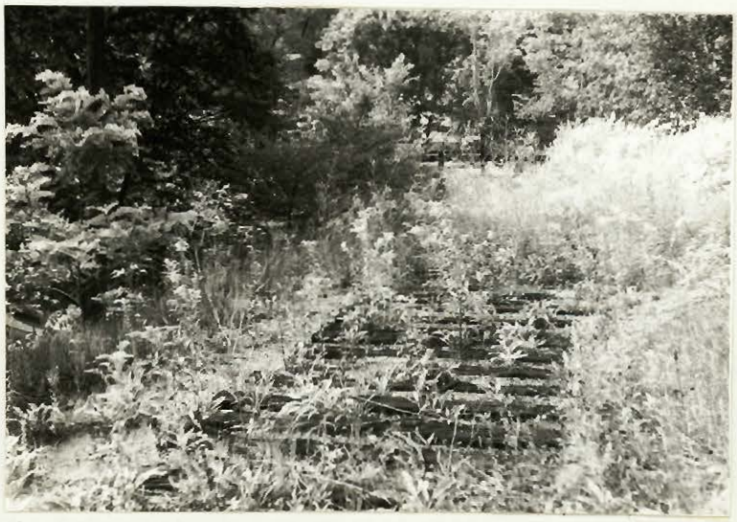

Illustration 10: Abandoned track of the Montpelier and Wells River Railroad, near Wells River village, Newbury.

Illustration 11: Former bridge of Montpelier and Wells River Railroad, over U.S. Rte. 5, Wells River village, Newbury.

Illustration 12: Former railroad station and terminus of the Barre-Williamstown Railroad, Williamstown; now a private home.

railroads in Vermont, and the decreasing number of stops made by trains in Vermont; this decrease began in the late nineteenth century and continues at present.

The precise effect of the availability of railway transport on life in Orange County is difficult to assess. The decline in rural population continued unabated, in spite of the fact that the railway placed the farmer in reach of markets in industrial Southern New England; movement from farm to factory was accentuated as manufacturing centers with railway transport expanded rapidly. However, the railway also made possible the rapid shipment of perishable agricultural products to southern New England, at least until rapid motor transport became available, and permitted the establishment of dairying, upon which much of northern New England is dependent today. Exploitation of copper was facilitated by railroad transport; in the 1880's copper ore was drawn down grade from Vershire to the Connecticut and Passumpsic Rivers Railroad station at Ely, in the town of Fairlee.

Agriculture: Decline Of Mixed Farming And Increasing Emphasis On Specialty Farming

The availability of cheaper agricultural goods from the West caused a decline of mixed farming and an increase in production of specialized farm products in demand by southern New England cities. The farmers in turn became

dependent on factory goods they had formerly made on the farm, such as cloth, soap, and candles. The spreading railroad net encouraged trade.

Efforts were made in Vermont to improve farming. The New England Farmer periodical, started in 1822, disseminated current knowledge of better farming methods.[4] County agricultural societies and county fairs inspired the farmer to produce quality goods for competition, and also provided social activities for the farm population.[5] In 1871 the Vermont state board of agriculture started;[6] also the first Grange.[7] The Federal Government granted agricultural college and experiment station subsidies.[8] All of these efforts succeeded in improving farming methods and quality of production.

Livestock, including milk cows, cattle, sheep, and swine, still formed an important part of the farming pattern and the value of slaughtered animals was a considerable part of farm income (see Table V). The total numbers of all livestock varied directly with fluctuations in the sheep industry, decreasing in 1850, increasing in 1860, and decreasing again in 1870. Although total numbers of livestock decreased from 126,979 in 1860 to 111,137 in 1870, the value of all livestock and the value of animals slaughtered increased due to improved breeding, inflation during the Civil War, and possibly an increased market during the war.

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[4]Wilson, op. cit., (1936), p. 175. [5]Ibid.; Stilwell, op. cit. (1948), p. 199.

[6]Wilson, op. cit., (1936), p. 177. [7]Ibid.; p. 180.

[8]Ibid., p. 181.

TABLE V

LIVESTOCK, ORANGE COUNTY*

	1840	1850	1860	1870
Horses	6,674	5,580	7,171	5,778
Milch Cows		10,777	12,001	10,661
Working Oxen	36,853**	5,138	4,892	3,912
Other Cattle		13,564	15,048	9,634
Sheep	156,043	71,551	84,189	77,816
Swine	22,716	7,337	3,678	3,336
Totals	222,286	113,947	126,979	111,137
Value all livestock		$ 974,258	$ 1,490,908	$ 2,091,368
Value animals slaughtered		$ 160,430	$ 210,985	$ 383,243

* Compiled from statistics in the Census of the United States for 1850-1870; 1840 statistics compiled from Hayward, op. cit., (1849). See Bibliography for details on volumes and pages consulted.

** All types of cattle.

Grain, hay, and potatoes occupied a large part of the cropped land (see Table VI). Total bushels of grain rose steadily from 1840 - 1880, but wheat and corn production declined when livestock increased in 1860, possibly indicating that land usually planted to wheat and corn was used for pasture instead; by 1870 numbers of livestock had decreased and wheat and corn production rose again. The importance of oats and buckwheat in the total amount of grain increased greatly after an 1850 decline. Potato yields declined by nearly half from 1840 to 1850, the years of the world-wide potato blight.

Production of specialized farm products for export was increasing (see Table VII). Slaughtered livestock had a large cash value. Orchard products had increased dramatically in value by 1870, and forest products were being exploited. Butter was replacing cheese as a more valuable dairy export. Improved sheep breeding kept the production of wool increasing through 1870 despite reductions in numbers of sheep. By 1870 the fluid milk market was opening up. Honey and maple sugar production fluctuated.

Improvements in farming methods with concentration on a few products produced a rise in the cash value of Orange County farms from over four million dollars in 1850 to over ten million dollars in 1870.[9] In 1870 there were 3,355 farms in Orange County; 1,202 of these were between 100 and 499 acres in size,

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[9]Seventh Census of the United States, 1850, (Washington, 1853), p. 41-43; Francis A. Walker, A Compendium of the Ninth Census, 1870, (Washington, 1872), p. 784-785.

TABLE VI

GRAIN AND FIELD CROPS, ORANGE COUNTY*

	1840	1850	1860	1870
Wheat	69,129**	52,822	43,207	51,952
Rye	12,933	9,740	8,803	2,939
Corn	120,698	176,586	123,532	174,261
Oats	254,878	205,457	297,825	316,148
Barley	5,265	1,861	4,278	5,699
Buckwheat	30,144	28,942	38,266	76,826
Totals	493,047	474,408	515,911	627,825
Potatoes	1,145,364	599,925	312,525	490,715
Hay	72,771	70,549	81,337	86,544

* Compiled from statistics in the Census of the United States for 1850–1870; 1840 statistics compiled from Hayward, op. cit., (1849). See Bibliography for details on volumes and pages consulted.

** All values in bushels except for hay, in tons.

TABLE VII

SPECIALIZED AGRICULTURAL PRODUCTS

	1850	1860	1870
Animals slaughtered	$ 160,430	$ 210,985	$ 383,243
Orchard Products	23,980	10,412	121,084
Forest Products			88,841
Honey (lbs.)	12,438	20,464	5,719
Maple Sugar (lbs.)	532,156	978,650	816,921
Cheese (lbs.)	428,876	291,176	105,285
Butter (lbs.)	869,042	1,007,250	1,062,104
Wool (lbs.)	248,715	312,525	498,749
Milk (gals.)			59,173

* Compiled from statistics in the Census of the United States for 1850-1870. See Bibliography for details on volumes and pages consulted.

and 1,269 were 500 to 999 acres in size.[10]

The reduction of the predominantly rural population of the county by sixteen per cent between 1840 and 1880, through natural decrease or emigration, resulted in large scale abandonment of marginal farm land, in plots and whole farms adjacent to or surrounded by lands never settled, and located on higher lands away from major stream valleys. This area is finely dotted on Fold Map 2. It seems advisable at this point to comment on the preparation of the map. Interpretation of air photographs in preparation of this map revealed five distinguishable vegetation patterns indicating the history of land use in Orange County. The area left blank on the map is "original" forest and has never been settled. The finely dotted area is second growth forest which took between eighty and 120 years to attain its present growth and density, indicating it was retired from agricultural use between 1840 and 1880. The mottled area represents scrub forest growth, thirty to eighty years in age, and therefore abandoned between 1880 and 1930. Heavily dotted areas have been abandoned within the last thirty years and are now covered by young scrub growth. Land presently under cultivation is cross-hatched. Illustration 13, with its overlay, shows the five vegetative areas as checked in the field.

Increase Of Small Manufacturing

Manufacturing for local needs began with the first settlers in Orange

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[10]United States Bureau of the Census. Ninth Census of the United States: 1870. Wealth and Industry, Vol. III, (Washington, 1872), p. 364.

Illustration 13: East Randolph, looking east on road from Randolph Center, showing stages in growth of vegetation:

1. "Original" forest, never settled.
2. Second growth forest, abandoned 1840–1880.
3. Scrub forest, abandoned 1880–1930.
4. Young scrub, abandoned since 1930.
5. Presently under pasture or cultivation.

County. Small saw and grist mills were built in most towns between 1770 and 1790[11] to supply flour and lumber for the early settlers; these were followed by forges and iron works, lumber, paper, and woodworking industries, marble and granite cutting, and factories for making screens, organs, knitwear, machine tools, scales, textiles, and maple sugar products.[12] By 1850, all towns in Orange County reported at least one, and sometimes several of these industries,[13] serving an increasingly wide market and supporting a small segment of the population.

In 1840, when sheep raising was prospering, preparation of wool and manufacture of woolen goods occupied most of the manufacturing population (see Table VIII). Twelve tanneries were manufacturing leather, boots, and shoes. Although it is possible that local hides were used, it seems more probable that the hides were imported into Boston and sent out to New England tanneries for processing and manufacturing as was the custom at this time.[14]

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[11] Abby M. Hemenway, The Vermont Historical Gazetteer, Vol. II, (Burlington, 1871), gives dates of first saw and grist mills in each town.

[12] Wilgus, op. cit., (Montpelier, 1945), p. 19.

[13] Vermont Year Book (changed title often, see Bibliography), lists manufacturers for each town, every year, as reported by the manufacturer.

[14] Samuel Eliot Morison, The Maritime History of Massachusetts, 1783-1860, (Cambridge, Mass., 1961), p. 266-269. From page 269, " In 1843, out of a total of 311,000 hides imported at Boston alone... 100,000 ... from Buenos Aires and Montevideo, over 46,000 from Chile, 48,000 from New Orleans, ... 33,000 from California. "

TABLE VIII

MANUFACTURING 1840-1870, ORANGE COUNTY*

	1840	1850	1860			1870		
	Estab.	Estab.	Estab.	Hands	Annual $	Estab.	Hands	Annual $
Agricultural Implements	1	3	2	10	$ 8,100	10	34	$ 39,428
Boxes, packing						1	12	40,600
Blacksmithing			1	1	930			
Carriages and wagons		1	4	22	17,760	12	38	30,380
Clothing	2		2	10	5,560			
Cooperage			1	4	2,250	6	16	12,709
Copper ore	1		1	75	30,225	2	355	358,845
Copper smelting			1	45	27,480			
Flouring Mill Products						10	20	228,360
Furniture	2		3	19	13,570	5	64	62,700
Leather, boots, shoes	15	14	6	14	25,744	14	18	45,215
Lumber sawed	1					19	63	120,602
Paper	2	3	2	17	25,000	3	32	50,050
Printing, newspaper			1	5	2,250			
Patent medicine						1	4	12,200
Saddlery and harness			4	7	3,910	12	21	19,473
Sash, doors, and blinds			1	1	572	2	19	49,750
Shovel handles			2	5	9,700			
Thread and cord			1	12	10,000			
Tin, copper, cast iron, etc.	4	2	1	3	1,650	5	9	12,715
Cloth dressing, carding	20					4	9	10,440
Woolen goods	4	4				3	29	64,500
Wooden ware			1	4	200			

	1840	1850	1860			1870		
	Estab.	Estab.	Estab.	Hands	Annual $	Estab.	Hands	Annual $
Starch	3	7						
Lead pipe, pumps		2						
Linseed oil	1	2						
Stone work	1	1						
Lime								
Machinery	2							
Totals	58	39	35	254	$ 188,701	107	753	$ 1,157,967

* Data for 1840 from Waltons' Vermont Register and Farmer's Almanac for 1844, and Hayward, op. cit., (1849); for 1850 from Waltons' Vermont Register and Farmers' Almanac for 1850; for 1860 and 1870 from U.S. Census statistics for the respective years (see Bibliography for details).

The main manufacturing towns at this time were the leading wool processing centers - Randolph, Bradford, Newbury, Chelsea, and Tunbridge (see page 92), but all had other small manufacturing activities. All of these towns had good water power sites and relatively good transportation.

Information for manufacturing establishments in 1850 was obtained from Waltons' Vermont Register and Farmers' Almanac for 1850 (now called Vermont Year Book) which is not fully reliable since manufacturers are depended on to report their own businesses. The decline in sheep raising had by then caused a decline in the associated wool industries. The leading industry had become the manufacture of leather, boots, and shoes. Seven starch factories also were operating despite the decline in potato production. Towns reporting five or more manufacturing establishments in 1850 were Bradford, Randolph, and Thetford.

In 1860, the largest part of the industrial labor force (120 men) was employed in mining and smelting of copper in Vershire (see Chapter VII for fuller discussion of the copper industry). Furniture, carriage, and paper manufacturing also employed relatively large numbers. The total number employed in manufacturing was 254 out of a total population of 25,455, indicating that only a small percentage of the population was supported by manufacturing. The copper, leather, and paper industries earned $ 108,449 of the total annual production of $ 188,701 in 1860. Vershire, Corinth, Randolph, Strafford and

Bradford were the leading manufacturing towns.

Manufacturing expanded considerably from 1860 to 1870 (see Table VIII, page 117). The number of establishments had risen to 107, and 753 people out of a population of 23,090 were responsible for an annual production valued at over one million dollars. Copper mining and smelting was the major industry, employing 355 with an annual production worth $ 358,845 in the towns of Vershire and Corinth. With the increase in grain production (see Table VI, page 112) flour mill products became important with an annual production worth $ 228,360. Lumbering was becoming a major industry employing sixty-three men and earning $ 120,602; a consequent rise in manufacture of furniture, paper, sashes, doors, and blinds is evident. High sheep production in the 1860's caused the woolen goods industries to prosper again. Manufacture of leather, saddles, and harnesses continued to be profitable. Major manufacturing centers were the mining towns of Corinth and Vershire, and Bradford, Chelsea, Randolph, Thetford, Tunbridge, Williamstown, and Wells River village in Newbury. Wells River (see Map 26) was an important railroad junction located on a good power site at the confluence of Wells and Connecticut Rivers. Here were manufactured lumber and paper products, tinware and stoves, leather harnesses and shoes, and flour and meal.[15]

Orange County remained predominantly agricultural, with a small manufacturing labor force processing products of the farm and forest and the one

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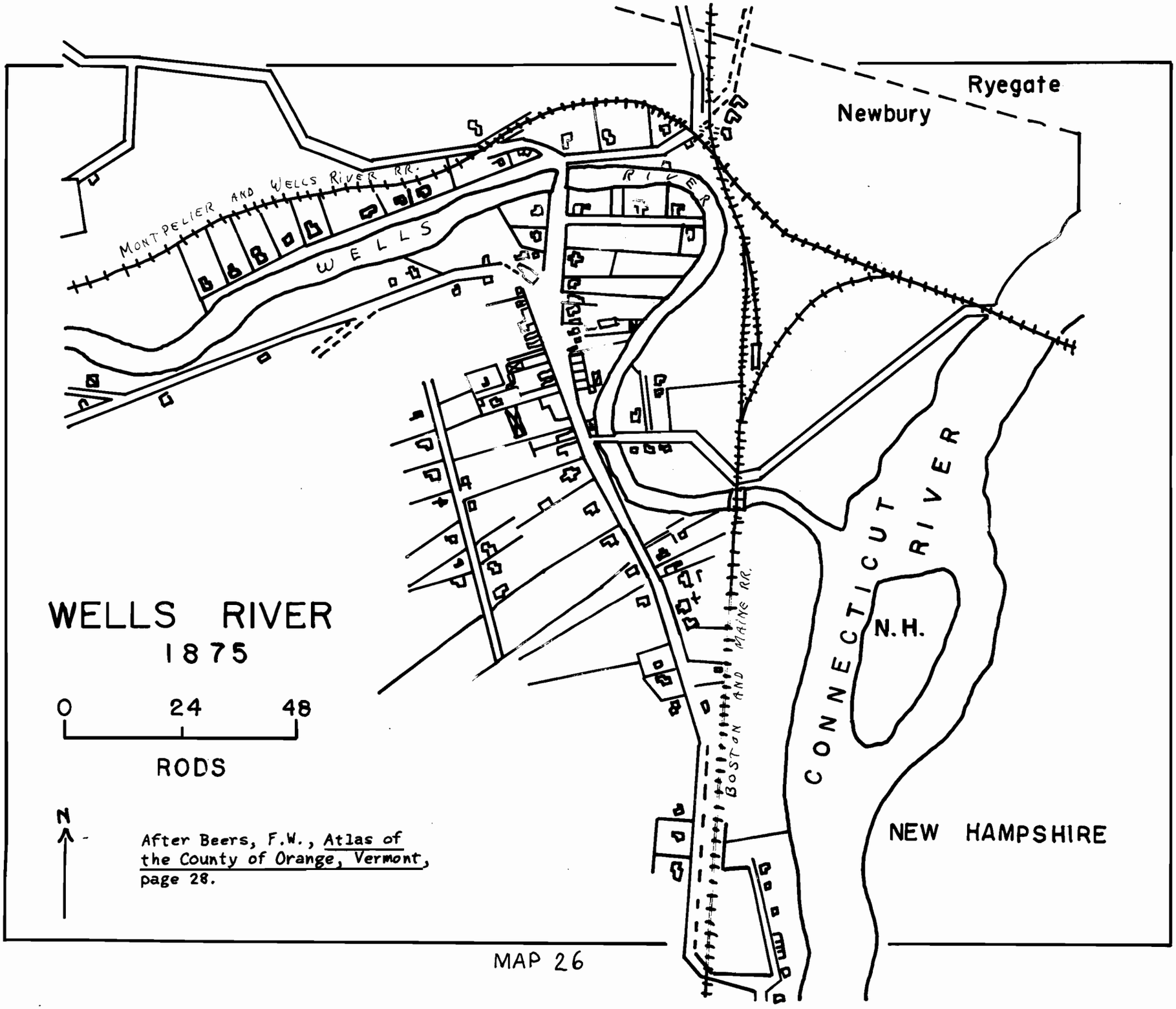
[15] Hemenway, op. cit., (1871).


Ryegate
Newbury
MONTPELIER AND WELLS RIVER RR.
WELLS
RIVER
CONNECTICUT RIVER
BOSTON AND MAINE RR.
N.H.
NEW HAMPSHIRE
WELLS RIVER
1875
0 24 48
RODS
N
After Beers, F.W., Atlas of the County of Orange, Vermont, page 28.

MAP 26

major mineral resource of the county, copper.

Emigration

During the forty years between 1840 and 1880, the greatest decline in rural population in the county's history occurred; the total population dropped from 27,873 to 23,525. In 1840 seven towns in the county reached their maximum populations, (see Table IV, page 100). Only three towns gained population from 1840 to 1880; Vershire and West Fairlee were prospering from the copper industry and Randolph from its superior agricultural development and manufacturing stimulated by its location on the Central Vermont Railroad.

To the cities. The rapid industrialization of southern New England during the nineteenth century, with the consequent opportunities for employment, was responsible for the earliest and most continuous emigration from rural areas. Emigration from Vermont farms to Massachusetts and New Hampshire cities had begun even by 1820 - 1830. Many women were dissatisfied with the standard of living on the farm, and in 1830 - 1840 girls started to emigrate to textile mill jobs. No statistics are available on Orange County separately, but by 1846 1,200 Vermont girls were working in Lowell, Mass.[16] By 1850, 17,646 Vermonters had moved to Massachusetts and 11,266 to New Hampshire factory towns.[17] Industrialization in the large cities, aided by effective transportation, inhibited local efforts toward industrial competition.

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[16]Wilson, op. cit., (1936), p. 68.

[17]Ibid., p. 69.

To the West. The 4,368 people who left Orange County from 1840 to 1880 did not all emigrate to an urban life in southern New England. It was to the newly opened territories west of Vermont that many moved. Emigration was part of the readjustment due to the lessened need for farm workers. The decline in agricultural population was basically due to the mechanization of farming and the consequent drastic increase in production per farm laborer. The decrease in family sizes, and the better education of young people, which led them to seek employment off the farm, resulted in farm abandonment and the combination of several small farms into one large one with the changing emphasis from mixed to specialty farming. A great advertising campaign for the west was waged, answered by the farmer, sheep breeder, railroad construction worker, salesman, school teacher, artist, and scholar, traveling via water routes (1840 - 1850). In 1848 the California gold rush drew 11,000 Vermonters;[18] stories of hardship were spread in the east and discouraged some would-be gold diggers.

The population of Orange County decreased only two per cent from 1840 to 1850. Table IX shows the numbers and places of residence of native Vermonters in 1850; largest emigration had been to New York and Ohio.

A population decrease of nearly seven per cent occurred between 1850 and 1860, the years of beginning decline in the sheep industry. Movement to

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[18] Stilwell, op. cit., (1948), p. 212.

TABLE IX

IMMIGRATION AND EMIGRATION, VERMONT, 1850*

1850	Native of Vt. Living in:	Resident of Vt. Born in:	Loss	Gain
N. Y.	52,599	7,218	45,381	
Penn.	4,532	158	4,374	
Ohio	14,320	165	14,155	
Ind.	3,183	15	3,168	
Ill.	11,381	34	11,347	
Mich.	11,113	86	11,027	
Wisc.	10,157	32	10,125	
Iowa	1,645	5	1,640	
Calif.	1,194	0	1,194	
Mass.	17,646	15,059	2,587	
N. H.	11,266	19,609		8,343
Conn.	1,508	4,551		3,043
Other (Me., R.I., N.J., Del., Md., D.C.)	2,233	1,831	402	
South (Va., N.C., S.C., Ga., Ark. Ky., Fla., Ala., Miss., La., Tenn., Tex.)	1,797	101	1,696	
Other (Mo., Minn., Ore., Utah, N.M.)	1,081	11	1,070	
	145,655	48,875	108,166	11,386

*Stilwell, op. cit., (1948), p. 214.

New York, Pennsylvania, and Ohio had practically ceased.[19] Movement to Michigan and Illinois contined; movement to the far west (Iowa, Minnesota, etc.) was increasing, but the greatest move was to Wisconsin. The effort to keep Kansas from slavery caused formation of emigration societies; one company went out from Randolph in 1855.[20] The real attraction seems to have been good land, since even more went into Missouri, a slave state.[21] The character of migration had changed; railroad transportation was used and the movement was cautious and organized. The type of emigrant had changed to include the investor, the ruined man looking for a fresh start, people searching for more healthful climates, those desirous of better opportunities for their children, and the conservative middle class moving in "colonies".[22] There was a feeling that Vermont lacked promise, and a desire for better land elsewhere; however, up to 1860 there was still some immigration into Vermont from New York, Massachusetts, New Hampshire, and Connecticut.

From 1860 to 1870 the county's population decreased nine per cent. Movement to the far West continued, stimulated by the recently chartered railroad companies which sought to develop the territory in and about their land grants. The Civil War, 1861 - 1865, drew 34,000 men from Vermont[23] of whom less than half returned to their homes. Some were killed; the majority took advantage of an act of Congress which made the period served in the army

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[19] Ibid., p. 216. [20] Ibid., p. 224. [21] Ibid., p. 225.

[22] Ibid., p. 228. [23] Wilson, op. cit., (1936), p. 73.

count as part of the time required to secure a free quarter section of land for a homestead in the west.

From 1870 to 1880 the population actually increased by 435, largely due to the expansion of the copper industry in Vershire, but rural depopulation continued. Some reasons for emigration, given by Allen in 1877, included; love of money and adventure, fondness for mental rather than physical labor, desire for a higher standard of living, dislike of hard work, etc.[24]

From hill to valley. The tendency of some early settlers to settle on the uplands first has been discussed in Chapter IV. The transition from self-sufficient agriculture and the consequent necessity for efficient transportation led many people to abandon the hill farms completely or move to valley locations along the best transportation routes. By 1849 Orange County was serviced by railroads running along the Connecticut and White River valleys; trade was concentrating in the valleys near mill sites, and the hill farm and village were isolated from commerce and transport. Randolph Center, located on the 1,300 foot level, is a good example of a village, long dominant in Randolph township, which lost its predominance to the village of Randolph when the railway came through that village on its way up the Third Branch of White River (see Map 27). Illustrations 14 - 18 show the village of Randolph Center as it is today. Illustration 19 shows Thetford Center, on the 900 foot level,

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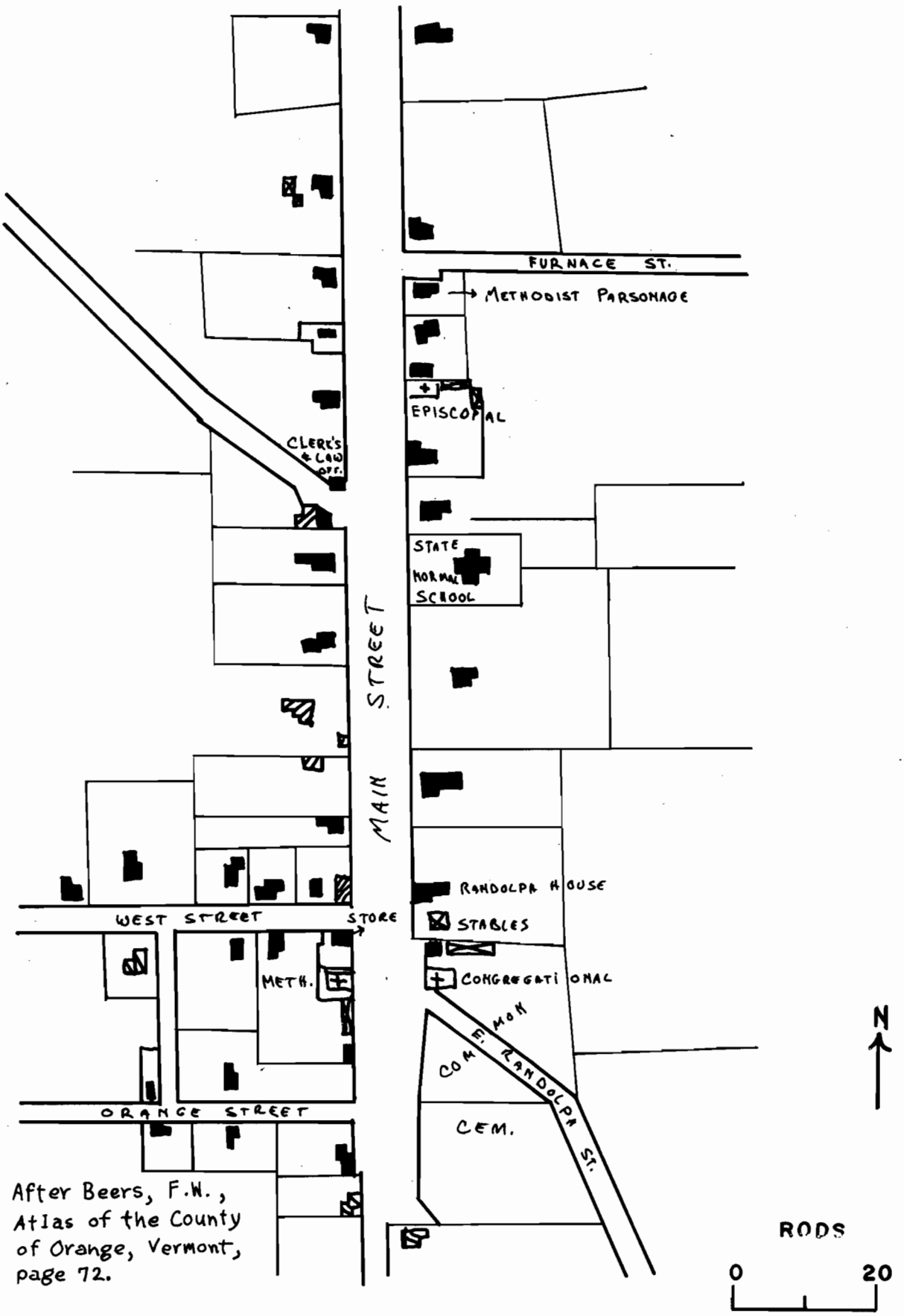
[24] Nathan Allen, Changes in New England Population, (Lowell, Mass., 1877), p. 11-13.

RANDOLPH CENTER about 1875



After Beers, F.W., Atlas of the County of Orange, Vermont, page 72.

MAP 27

Illustration 14: State Agricultural School, Randolph Center (at location of State Normal School on Map 27 since 1910).

Illustration 15: Abandoned house, Randolph Center (across side street from "Clerk's & law office" on Map 27).

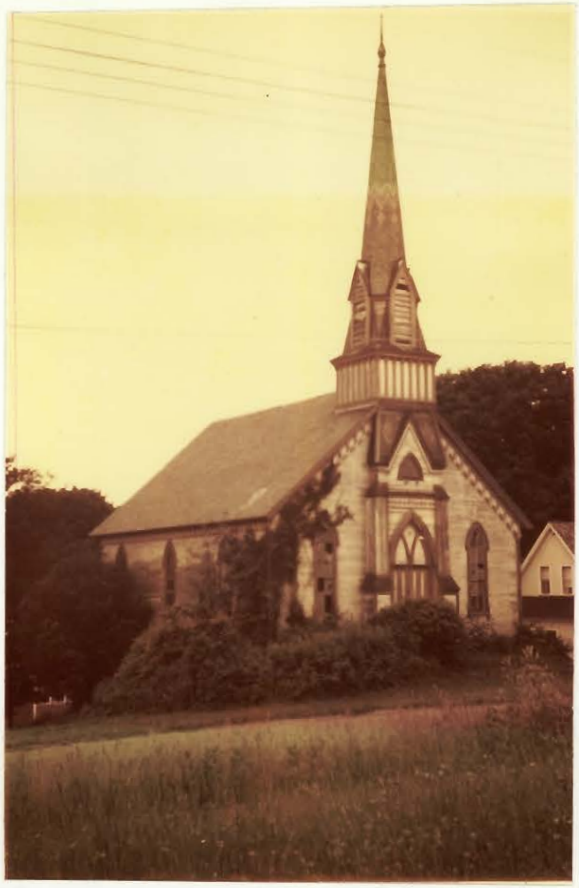


Illustration 16: Abandoned Methodist Church, Randolph Center (see Map 27).

Illustration 17: Congregational Church, Randolph Center (see Map 27). Note abandoned house in background.

Illustration 18: New residences, Randolph Center, (north of area on Map 27), reflecting continued prosperity of Randolph township as a whole.

Illustration 19: Thetford Center, a hill village, now a center for artists and writers in summer.

which was originally the main village in its township and is now the center of a small summer "art" colony. Several other hill villages declined also.

The most complete study of the abandonment of hill farms in northern New England concerns the town of Lyme, New Hampshire, across the Connecticut River from Thetford; the depopulation of the eastern half of Lyme, most of which is 1,100 to 1,400 feet above sea level, is described and mapped in four stages from 1830 to 1925.[25]

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[25] James Walter Goldthwait, "A Town That Has Gone Downhill", Geographical Review, 17 (Oct., 1927), p. 527-552.

Chapter VII

CONTINUED DECLINE: 1880 - 1930

The population of Orange County continued to decline; the 1880 population of 23,525 had been reduced twenty-nine per cent by 1930, the fastest rate of decline in the county's history. Agriculture continued toward specialization, with the dairy industry developing into the major specialty; some areas of marginal land were abandoned or scientifically reforested. The copper mining industry reached its peak prosperity in the late nineteenth century, and small manufacturing, based on forest and food products, increased.

Rise Of The Dairy Industry And Other Specialty Farming

Railroad connections with southern New England provided an impetus to the dairy industry, which succeeded the sheep industry in agricultural importance. The number of milk cows nearly doubled from 1870 to 1900, as the number of sheep declined (see Table X). Dairying enabled the farmer to utilize the whole family to a greater degree than had wool production. The price of wool fluctuated constantly while there was a growing demand for dairy products in industrial southern New England.[1]

Dairying was stimulated by the introduction and extension of the associated dairying method, whereby butter and cheese, the chief dairy products

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[1]Wilson, op. cit., (1936), p. 192.

TABLE X

DAIRY PRODUCTS, ORANGE COUNTY*

	1850	1860	1870	1880	1890	1900	1910	1920	1930
No. Milk Cows, Vt.**	146,128	174,667	180,285	217,033	231,419	270,194			
No. Milk Cows, Orange County	10,777	12,001	10,661	13,072	15,171	20,327	19,081		15,166
Value Dairy Products						$ 749,460		$ 938,206	$ 1,971,280
Milk Sold (gals.)			59,173	31,612	6,190,778 (produced)	5,198,298 (produced)	1,205,444	2,543,045	4,992,758
Butter Produced (lbs.)	869,042	1,007,250	1,062,104	1,488,601	1,782,646	1,523,412	1,636,301	375,663	
Cheese Produced	428,786	291,176	105,285	105,360	41,872	12,953	725	760	

* Compiled from statistics in the Census of the United States for the respective years; full information on volumes and pages consulted may be found in Bibliography.

** Wilson, op. cit., (1936), p. 205.

from 1870 to 1900, were manufactured in a centrally located factory, usually owned by a proprietor or group of farmers, to which all farmers brought their fluid milk.[2] This new system offered a good market for the milk and insured a regular and reliable cash income. More efficient methods of production, better care of cows, introduction of the silo, the centrifugal separator, the "Babcock Tester" for measuring the quantity of butter fat in milk, and improvement of breeds of milk cows, caused an increase in quality and quantity of milk produced.[3] State dairy associations were formed and published annual reports containing informative articles. Dairying was profitable, and a possible solution to the need for specialization in the failing Vermont agriculture.

From 1900 to 1930 the market for milk and cream increased; after 1900 the Boston milkshed penetrated very deeply into northern New England, using rail transport. By 1920 shipping stations trucked milk in from farms to railway pickup stations.[4] A big campaign in Boston promoted the use of milk; butter and cheese production declined with the rise of fluid milk sales (see Table X, page 133).

By 1930 a greater proportion of the inhabitants of Vermont than of any other state in the country depended on the dairying industry.[5] Vermont was able to produce more cheaply than the other New England states because of suitable climate and pasture, and the tendency to raise the feed used. The midwestern

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[2] Ibid., p. 194-195.

[3] Ibid., p. 198-201.

[4] Ibid., p. 305.

[5] Ibid., p. 312.

producers had captured the Boston market for butter, cream, and ice cream by 1930, but they could not compete on the fluid milk market because of bulky, costly transport and perishability.[6] Major problems were uneven seasonal production, high freight rates, contractors, and winter dairying. Motor transport was an improvement over the railroad, providing a more flexible transport system. It was a problem at times for the dairy farmer to secure a profitable outlet for fluid milk; the city dealers were accused of with-holding an unfair share of profits, but united efforts by the producers had some effect.[7]

State efforts toward improved farming and rural living continued. In 1908 a salaried Commissioner of Agriculture was appointed in Vermont to promote the farmers knowledge;[8] in 1911 and 1912 Farm Extension Service in Vermont began. The County Agent was of constant service to the farmer,[9] supplemented by the Home Demonstration Agent and the County Club Agent;[10] the Grange was still influential. All of these efforts roused new interests in the farmers. Rural isolation was tempered through Rural Free Delivery mail service, the telephone, the automobile, electricity, the radio, and improved roads.

The trend in numbers and sizes of farms from 1870 to 1920 (see Table XI), although showing fluctuations, was toward fewer but larger farms, an indication of the conversion from mixed farming to specialty farming. Perishable products for close markets were able to avoid Western competition.

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[6] Ibid., p. 239. [7] Ibid., p. 337-339. [8] Ibid., p. 50.
[9] Ibid., p. 253. [10] Ibid., p. 254-255.

TABLE XI

NUMBER AND SIZE OF FARMS, ORANGE COUNTY*

	1870	1880	1890	1900	1910	1920
Number of farms	3,335	3,460	2,928	3,150	3,016	2,627
50 - 100 acres	1,202			623		
100 - 499 acres	1,269	2,000	1,796	1,636		
Average size, acres	120	121	132	135	130	140
Total acres in farms	400,742			425,691		

* Compiled from statistics in the Census of the United States for the respective years; see Bibliography for details on volumes and pages consulted.

The total number of livestock was declining rapidly, as was the value of slaughtered livestock (see Table XII and compare to Table V, page 110). Dairy cows formed an increasing proportion of the total livestock; sheep and colts were raised on land too rough for cows.

Production of potatoes and the various types of grain fluctuated considerably (see Table XIII), but the general trend by 1930 was a decrease of grain production, probably due to the increased amount of land used as pasture by the expanding dairy industry. After 1900, corn was the major grain produced; it is used for winter feed for dairy herds.

Dairy products had the highest value of farm specialty products in 1900 (see Table XIV), followed by slaughtered livestock, poultry, and orchard products (mainly 55,356 bushels of apples). Nearly 200,000 pounds of maple sugar and over 6,000 gallons of maple syrup were produced. By 1930 the value of dairy products and poultry had increased considerably. Field and orchard crops, vegetables, and farm garden products together were nearly as valuable as dairy products. Production of maple sugar had declined to 102,676 pounds in favor of production of 56,019 gallons of syrup.

The increased value of forest products by 1930 reflects the natural and scientific reforestation underway on untilled lands: woodlots were gradually extended through afforestation for the farmers' own use or sale on the steady lumber market and legislation promoted reforestation in the form of State Forests

TABLE XII

LIVESTOCK, ORANGE COUNTY*

	1880	1890	1900	1930
Horses	6,838	7,506	7,215	4,320
Dairy Cows	13,072	15,171	20,327	15,166
Other cattle	12,267	13,601	17,389	19,941
Sheep	71,742	43,640	25,413	4,503 (including lambs)
Swine	7,338	8,370	8,051	2,955
Total	111,257	88,308	78,395	46,935
Value animals slaughtered			$ 120,381	
Value animals sold live			$ 218,784	

* Compiled from statistics in the Census of the United States for the respective years; see Bibliography for details on volumes and pages consulted.

TABLE XIII

GRAIN AND POTATOES, ORANGE COUNTY*

	1880	1890	1900	1910	1920	1930
Wheat**	35,417	19,900	850	270	12,067	1,003
Rye	1,643	769	800	1,201	154	
Corn	4,539	4,488	249,730	155,653	78,939	26,805
Barley	15,330	34,881	21,020	22,526	12,722	11,279
Buckwheat	56,574	62,098	25,930	21,032	10,278	1,687
Total	113,503	122,136	298,330	200,682	114,160	40,774
Potatoes	390,006	163,025	210,355	278,807	200,030	157,328
Hay (tons)	86,155	99,176		137,838	149,196	73,347

* Compiled from statistics in the Census of the United States for the respective years; see Bibliography for details on volumes and pages consulted.

** Values in bushels.

TABLE XIV

VALUE OF SPECIALTY PRODUCTS*

	1900	1910	1920	1930
Dairy Products $	749,460	938,206	1,792,392	1,971,280
Poultry	41,562	244,796	118,926	183,631
Orchard Products	28,078	94,704	180,412	1,835,158 (Field and orchard crops, vegetables, farm gardens)
Animals slaughtered	120,381	136,932		
Forest Products	192,825			566,424

* Compiled from statistics in the Census of the United States for the respective years; see Bibliography for details on volumes and pages consulted.

planted with white, red, or Scotch pine.[11] Possibly the greatest potential value of all abandoned cleared land in northern New England lies in its proper utilization through scientific forestry.[12]

The Copper Industry And Its Temporary Prosperity In Orange County

During the nineteenth century copper was mined in Orange County with varying success and fluctuation of operations. Three towns contained workable deposits of copper, all located along a mineralized copper zone twenty by five miles in extent extending from southeast Strafford through eastern Vershire into southeast Corinth. The ore was a chalcopyrite-pyrrhotite mixture running up to 2.25 per cent copper with some silver and a trace of gold.[13] This ore was discovered in Strafford in 1793, thirty years later in southeast Vershire, and twenty years after that at Pike Hill in Corinth. Mining has been carried on extensively at different times at all three places, but on the largest scale at Vershire.

Vershire. Vershire had its copper heyday from 1853 to 1883. In 1854 the Vermont Copper Mining Company was organized with Captain Thomas Pollard, an experienced Cornish miner in charge.[14] The company had no smelter

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[11] Wilson, op. cit., (1936), p. 244. [12] Ibid., p. 248.

[13] G. M. Hutt, The State of Vermont, (Montreal, 1958), p. 18.

[14] Arthur F. Stone, The Vermont of Today, (New York, 1929), p. 536.

at first, but sorted the ore, shipping only the highest grade. In 1867 the mine property (see Map 29) included a smelter, furnace building, boiler house, stamp-house, 2,400 feet of railroad, a blacksmith's shop, lumber house, and coke-house. One hundred and forty-five people were employed in the operation. The smelted ore produced a material called regulus, containing thirty-six to thirty-seven per cent pure copper.[15] The mines reached peak prosperity in 1882 at which time the village of Copperfield, near the mines, furnished quarters for as many as 1,200 workmen;[16] it was estimated that nearly 2,000 persons were supported directly by the Company, many of whom lived outside company property in West Fairlee and Vershire.[17] At the peak of production (see Table XV) these copper mines turned out sixty per cent of the entire U.S. output of copper. The depression of 1883 ruined the company; it sold out to Copperfield Mining and Smelting Company. The latter company, in 1891, employed a total of 173 people at their plant. Of these, forty-six were miners and trammers, forty operated kilns and furnaces, twenty-five worked in the rock house and dressing house, twenty were outside laborers, twelve acted as engineers, machinists, blacksmiths, and drill sharpeners, ten were carpenters, wheelwrights, masons and bricklayers, twelve were teamsters and car men, four were wood

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[15] Abby M. Hemenway, The Vermont Historical Gazetteer, Vol. II, (Burlington, 1871), p. 1137.

[16] Stone, op. cit., (1929), p. 536.

[17] "The Copper Mines of Ely - Copperfield, in the Town of Vershire, Vermont", Vermonter, 2 (Sept., 1896), p. 30-35.

ELY
town of Vershire
about 1875

Changing house
Entrance to mines
B.S.S.
Dressing house
Spring
Engine House of
Old Burleigh Shaft
Roast Beds
N
0 13 26
RODS

Mine opened 1853. Smelting Furnace 450 feet in length erected in 1867 and 1876. Depth of Mine 1,500 feet, angle 25° pitch.

After Beers, F.W., Atlas of the County of Orange, Vermont, page 58.

Coal shed
Roasting kilns
Coke shed
Engine House
Smelting furnaces
Scales
B.S.S.
office & laboratory
Stock
Methodist Church
Catholic Church
Dentist
Store and P.O.
E.P. Johnson & Co.
Dam
School

VERMONT COPPER MINING COMPANY

MAP 29

TABLE XV

COPPER PRODUCTION, VERSHIRE*

Year	Tons of Copper
1854	134
1855	198
1856	137
1857	246
1858	314
1859	188.5
1860	1,452
1861	1,240
1862	1,113
1863	1,400
1864	897
1865	1,430
1866	3,615
1867	4,932
1868	5,682
1870	471.7**
1876	823.4**
1880	1,593.1**

References for TABLE XV:

* Hemenway, op. cit., (1871), p. 1137.

** F.M.F. Cazin, Report of the Vermont Copper Mine Mill and Furnaces in the Town of Vershire, Orange County, State of Vermont, (Windsor, Vt., c. 1889), p. 4.

choppers, and four worked in the office and laboratory. The company then owned 120 houses, of which the older ones were in need of repair; a number of barns, lumber sheds and wagon sheds were built to care for company property. Connecting tracks from the mine to roasting plant kilns and furnaces were established.[18]

Around 1900 the plant was demolished,[19] the miners houses were sold for twenty-five to fifty dollars and removed,[20] and the village of Copperfield ceased to exist. During World War I a mill was erected and a crusher, flotation mill, classifier and other machinery, and a power plant were installed to utilize the great ore dumps. The work was proceeding successfully when the war ceased and the price of copper dropped below the level of possible profit, necessitating closing the mill. In 1929 the mill, machinery, reservoir, pumping station and other buildings were being kept up,[21] but in 1942 there was but one house to mark the site of the village of Copperfield; only the ore dumps and furnace ruins remained.[22] In 1961 roads in the area were impassable. Illustration 20 shows the old station at

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[18] Annual Report of the Copperfield Mining & Smelting Co., March 1891, p. 6-7.

[19] Elbridge C. Jacobs, "Reopening of the Vermont Copper Mines", Report of the State Geologist on the Mineral Industries and Geology of Vermont, (1941-1942), p. 7.

[20] Eileen Bugbee Dee, "Vermont Copper Ghost Town", Vermonter, 47 (Dec. 1942), p. 169.

[21] Stone, op. cit., (1929), p. 536.

[22] Dee, op. cit., (1942), p. 169.

Illustration 20: Old station at Ely, on Boston and Maine railroad in Fairlee, former shipping point for Vershire copper.

Ely, in the town of Fairlee on the Boston and Maine railroad, from which copper ore was formerly shipped after a nine mile haul.

Strafford. Workable deposits of sulphuret[23] of iron and iron pyrites occur in the southeast corner of the township of Strafford. From this bed, immense quantities of copperas ($FeSO_4 \cdot 7H_2O$ or ferrous sulfate) were manufactured in situ beginning with the Vermont Mineral Factory Company chartered in 1809. The sulphuret of iron was blasted from the bed, broken into small lumps by hammer, thrown into heaps, and set on fire. After two months of combustion the sulphur had combined with the oxygen of the atmosphere, forming sulphuric acid, and this acid combined with the iron forming sulphate of iron or copperas. The crude copperas, mixed with earthy matter, was then leached, and the lye evaporated to such a consistency that a large proportion of the copperas crystallized as the liquid cooled. After the crystallization was completed the liquid was drawn off and the copperas dried and packed in casks,[24] drawn down grade to the Boston and Maine railroad station at Pompanoosuc (Norwich, directly south of Thetford), and shipped to Boston where it was used in dyes and disinfectants and to set colors in calico prints. For "many years" more than one

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[23] Sulphuret is a sulfide, or combination of sulphur with another element, in this case iron.

[24] Zadock Thompson, History of Vermont, Part III, (Burlington, 1842), p. 167-168.

million pounds of Vermont copperas was sold annually.[25]

Copper ore (sulphuret of copper) is found in Strafford in connection with the sulphuret of iron. In 1829 a furnace was erected at Strafford for smelting this ore for copper, but it was not found to be profitable and after a few years the business was abandoned.[26]

During the mining fever of 1863-1864, five companies attempted to work copper mines in the town; none made a profit and all closed down inside of a few years. In 1867 the New England Chemical Company was working the mines.[27] In 1907 it was reported that ore sorting, crushing, grinding and roasting were being carried out at the mines by 100 men living in a village of thirty or forty dwellings;[28] the works were not open in 1914.[29] In 1930 it was reported that copper was being mined and the ore shipped outside the state where the copper was extracted.[30] During World War II, the mine was reopened and reconstructed for operation, but after July, 1947, mining was unprofitable

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[25]Hemenway, op. cit., (1871), p. 1087.

[26]Thompson, op. cit., (1842), p. 168.

[27]Hemenway, op. cit., (1871), p. 1085.

[28]Elizabeth M.F. Chandler, "Strafford", Vermonter, 12 (March, 1907), p. 100-106.

[29]Vermont Bureau of Publicity, Industrial Vermont, (Essex Junction, Vt., 1914), p. 23.

[30]Industrial Survey of Vermont, (Montpelier, 1930), p. 23.

due to the unexpectedly low grade of the ore.[31] The mine finally ceased operations in 1958 after a 1957 production worth $ 2,050,000.[32] When checked in the field in summer 1961, many abandoned buildings, old equipment, and ore dumps remained; also former company houses (see Illustrations 21 - 22).

Corinth. The Corinth Copper Company was chartered in 1855 and began work there in 1863. In 1866 117 men and boys were employed; in 1877 the Union Mine plant was sold to Vermont Copper Mining Company which was running a large copper mining operation in Vershire (see page 141). The business was pushed vigorously for a while; the ore was transported over the hills nine miles to the furnace at Ely (Vershire) where it was smelted. Copper prices fell in the 1883 panic rendering the mine unprofitable.[33] During the height of operations the Vermont Copper Mining Company employed 450 miners at Ely (Vershire) and 300 at Corinth. The entire product was sold to Ansonia Brass and Copper Company of Ansonia Conn., for use in copper wire.[34] The Corinth mines closed in 1919.[35]

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[31]The Vermont Copper Company, Inc., The Elizabeth Miner, April, 1949.

[32]Unpublished, mimeographed data supplied by University of Vermont, Dept. of Agriculture.

[33]News item in the United Opinion (Bradford, Vermont), July 26, 1895. This was a special issue about Corinth.

[34]"The Copper Mines of Ely - Copperfield, in the Town of Vershire, Vermont", op. cit., p. 30-35.

[35]Jacobs, op. cit., (1941), p. 12.

Illustration 21: Deserted copper mine, Strafford.

Illustration 22: Abandoned company houses, near copper mine, Strafford.

Copper mining provided a brief period of prosperity for those working for the company and associated service industries in Orange County in the latter part of the nineteenth century. Most of the people connected with the industry emigrated from the county after its decline (see page 159).

Manufacturing Trends, 1880-1930

Major trends in manufacturing in Orange County between 1880 and 1930 can be observed on Table XVI, which shows the numbers and categories of manufacturing establishments as reported in the Vermont Register (or Vermont Year Book)[36] for the respective years. In the latter half of the nineteenth century certain trends were established that have lasted to the present.

The manufacture of woolen goods, a dominant industry from 1840 to 1860, had practically ceased by 1880. The main reason for this decline was, as discussed in Chapter V, competition from cheaper textiles manufactured in other parts of the United States using foreign and domestic (Western) wools.

After 1890, the manufacture of leather products ceased abruptly, consequent with the development of large factories in southern New England which processed the materials formerly dealt out to small concerns for manufacture. The manufacture of iron and steel products declined drastically at about the

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[36]This source, although dependent on the individual establishments to report themselves and therefore not strictly accurate, gives a good general picture of trends.

TABLE XVI

MANUFACTURING ESTABLISHMENTS, ORANGE COUNTY*

Category	Number of Establishments											
	1844	1850	1860	1870	1880	1890	1910	1920	1930	1940	1950	1960
Food, feed, and kindred products		7	2	1	10	9	22	23	21	15	12	11
Textile mill products (wool)	4	4	2	3	4				1	1	1	2
Apparel and other fabricated textile products									1	1	1	2
Furniture, lumber, and wood products			3	20	25	34	36	28	25	24	23	27
Paper and allied products	2	3	3	3	2	2	1	2	1	1	1	1
Medicine, chemicals, and allied products				2	3	2	2	2		1	1	1
Rubber products								1	1	1	1	1
Leather and leather products	3	16	11	15	6	11						
Stone, clay, and glass products		2	2	3		2	3	3	6	2	1	1
Iron, steel, and their products	3	5	11	14	12	8	1	2	2	1	3	
Non-ferrous metals and their products (lead, Cu, tin)		2	2	2	1	4	4	1	1	1	2	2
Other machinery		1								1	1	
Transportation equipment		1	2	5	3	15	1	1	1	1	1	
Miscellaneous		2	1	2	2	2	1	3	3			

Reference for TABLE XVI:

* Compiled from information for each town, each year, in Vermont Year Book for the respective years, see Bibliography for full details.

same time, and for much the same reasons; the development of the factory system and consequent mass production distributed by rail transportation ruined the small manufacturer.

While a decline was occurring in the above industries, other industries were expanding to replace them. The wood products industries had established a dominant position by 1870 which they retain to the present time. By 1890, food products (mainly cheese and butter, see Table X, page 133, for amounts) had also come to the foreground with the establishment of creameries in several towns.

In a 1914 survey[37] the major industry in Orange County was based on forest products. Table XVII shows the type of wood products and location of manufacturers.

Food products comprised the second largest category of manufactures in the county. There were nineteen creameries operating, in all towns except Braintree, Fairlee, Orange, and Williamstown, manufacturing butter and cheese for export. Seventeen grist mills in thirteen towns manufactured flour products. Six cider mills operated in Braintree, Brookfield, Strafford, Tunbridge, and Washington, utilizing the large apple production. Vegetables were canned in factories at Randolph and South Newbury. Maple sugar and syrup production continued, with processing centers at Williamstown and Randolph.

Stone products formed another large item of manufacturing: deposits of

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[37] Vermont Bureau of Publicity, op. cit., (1914).

TABLE XVII

WOOD PRODUCTS, ORANGE COUNTY, 1914*

Type of Product	Locations of Manufacture
Lumber, shingle, and saw mills	53 in County; all towns had between 1 and 6
Planing mill products	Fairlee, Newbury, Randolph, Strafford, Tunbridge
Bobbins, shuttles, spools, felloes, etc.	Chelsea, Corinth (2), Topsham, Vershire, West Fairlee
Cheese and butter boxes	Bradford, Randolph, Corinth, Topsham
Agricultural implements	Randolph
Wrapping paper	Wells River village
Furniture	Randolph, Vershire, West Fairlee
Door, sash, and blind	Bradford, Randolph
Burial caskets	Brookfield
Baskets and wood novelties	Wells River village

* Vermont Bureau of Publicity, op. cit., (1914), compiled from information on each town.

schist from Piermont, N. H. were made into whetstones at Bradford; marble and granite were finished in Randolph; Washington had a granite plant, and Williamstown, connected by rail to the great granite deposits in Barre, had two plants quarrying and processing local granite.

Miscellaneous manufactures included: copper works and cutlery factory at Strafford; hydroelectric power at Bradford; rubber stamps and steel agricultural implements at Randolph; a machine shop at Corinth; a wheelwright at Chelsea, and a carriage manufacturer at Bradford. Fairlee was already promoting tourism. Randolph village remained the leading manufacturing center, followed by Bradford village and Wells River village in Newbury. These three largest nucleated settlements in the county had populations of 1,540, 614, and 565 respectively in 1900.

According to a 1930 survey,[38] 657 people in Orange County, out of a total population of 16,694 were employed in manufacturing. This proportion represents a substantial increase from earlier years. The principal industry of the county was still based on lumber products, employing 468. Paper products, mainly manufactured in Wells River, employed thirty-one laborers. Ninety-seven men were employed in granite works in Randolph, Williamstown, and Chelsea; sixty-one were employed at miscellaneous industries which presumably included creameries and the South Strafford copper mines. More details of employment breakdown are discussed in Chapter VIII, page 170.

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[38] Industrial Survey of Vermont, (Montpelier, 1930), p. 13, 17.

Depopulation And Land Abandonment, 1880 - 1930

The population of Orange County declined from 23,525 in 1880 to 16,694 in 1930. Land abandonment was not as great as the population decline would indicate since many emigrants were not farmers, and many people sold their farms for consolidation with neighboring farms. The majority of abandoned land seems to consist of whole farms rather than isolated plots (see finely dotted area on Fold Map 2).

In the four westernmost towns, Braintree, Brookfield, Randolph and Williamstown, the majority of land abandoned was whole farms, many but not all adjacent to land not in use in 1880. The population decrease for these four towns nets only seventy people: Braintree lost 416 and Brookfield 478, while Randolph gained 256 and Williamstown 578. The increases, mainly from 1880 to 1890, were due to Williamstown's prosperity in the granite business and Randolph's position as a leading manufacturing and business center and the largest town in the county. Railroad transport to these two towns undoubtedly accounted for a large measure of their prosperity. Randolph shows no major land abandonment during this period, while Williamstown shows some in its hilly western parts. Braintree and Brookfield do not show enough abandonment to account for all the population lost; the tendency toward consolidation of farm lands and the resultant larger amount of farmed land per person probably account for this situation.

In the central eight towns, the main pattern seems to be abandonment of small areas, mainly adjacent to unused land; a few farms were also left. All towns lost population, the total loss being 4,793. Of this, a possible 2,883 is directly attributable to the failure of the copper business in Corinth, Strafford, and Vershire. The biggest decline in these towns came from 1880 to 1890 when Corinth lost 810 people, Strafford 556, and Vershire 1,507. The loss from the remaining five towns, Chelsea, Orange, Topsham, Tunbridge, and Washington was 1,910. Very little land was abandoned in the copper towns; any loss of people from farms was probably compensated by the increase in farm sizes and consequent reduction in numbers living on farms. Illustrations 23 and 24 show signs of abandonment in Tunbridge.

In Connecticut River towns, land was abandoned mainly in plots adjacent to or surrounded by unused land. The abandonment of land here in this period was the greatest in the county. The total decrease in population was 1,980, of which West Fairlee and Thetford lost 1,110, mainly between 1880 and 1890. West Fairlee had provided homes for many of Vershire's copper miners; Thetford had performed a similar function for Strafford. Newbury lost the largest number of rural inhabitants, 572.

Therefore, of a total reduction of 6,831, possibly 3,993 were associated with copper mining and the related business and service industries. Fewer people left the land than in 1840 to 1880 and the total area of abandoned land was

Illustration 23: Abandoned church, northeast of Tunbridge village.

Illustration 24: Abandoned farm buildings, Spring Rd., Tunbridge.

smaller. Early abandonment was probably of the small or marginal farms; later consolidation of farms for specialty farming kept land in use even though the original owner had left.

By 1900 more Vermonters were moving to the industrial cities of southern New England than to the West. From 1850 to 1900 nearly forty per cent of Vermont's population emigrated each decade.[39] Some reasons given were heavy taxes per capita as population decreased, illiberal Puritanism, the climate, infertile soil, the inadequacy of the hill farm, and even poor diet and excessive drinking![40] From 1900 to 1934, a quarter of the farms in Vermont were given up due to high taxes and lack of labor.[41]

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[39]Wilson, op. cit., (1936), p. 101.

[40]Ibid., p. 117-124.

[41]Ibid., p. 349-354.

Chapter VIII

STABILIZATION: 1930 - 1960

Between 1930 and 1960 the population of Orange County has remained stable at approximately 16,000. The net change within this period was a decrease of eighty people; however, shifts have occurred within the county. Thirteen towns have lost approximately 100 people each (see Table IV, page 100), and Newbury lost nearly 300. Rural population is lowly declining while the larger villages become larger. Randolph, Bradford, and Fairlee have gained population since 1930; Bradford is a small manufacturing center, Bradford and Fairlee profit from the tourist and recreation business on busy route U.S. 5 along the Connecticut River, and Randolph is a regional trade and manufacturing center. The main business of the county remains predominantly agricultural and dependent on the dairy business.

Agricultural Emphasis On Dairying

Table XVIII shows the decrease in number of farms, per centage of land and acreage in farms, and the increase in size of farms from 1900 to 1960. It is evident that only the better lands are being used and that the large pasture area required for dairy farming is resulting in larger farms. Hay, grain, and pasture are cultivated in connection with the dairy industry. Map 30, part of

TABLE XVIII

FARM SIZES, ORANGE COUNTY*

	1900	1930	1960
Number of farms	3,150	2,298	1,068
Per cent of land in farms		81.2	58.7
Acres in farms	425,691	381,247	259,166
Average size of farm in acres	135.1	152.8	242.7
20 - 100 acres	623	616	
100 - 175 acres	1,106	722	
175 - 260 acres	530	435	
260 - 500 acres		250	

* Compiled from statistics in the Census of the United States for the respective years; see Bibliography for details on volumes and pages consulted.

Map 30, Agricultural Land Classification, 1937*

Class 1, White Area: Areas in which agricultural income has been sufficient to provide, and to maintain in excellent condition, ample facilities for living and for the conduct of the business of farming; lands which are adapted to intensive dairying or to a combination of dairying and cash crop production. In a general way it comprises the level to rolling bottom lands of (the Champlain Valley and) the river valleys, together with a small amount of the more fertile, level, and stone-free terrace and hill lands. Soils are mostly loams and clay loams and are to a large extent calcareous.

Class 2, Dotted Area: Areas in which agricultural income has sufficed to provide and maintain adequate facilities for living and for the business of farming; lands which are well adapted to dairying and crop production. For the most part it is made up of the better hill farming sections, but includes also some of the flood lands and the heavier clays of the valleys. With this exception, the soils are predominantly loams and sandy or gravelly loams and are quite generally acid. Stoniness and rough topography interfere with tillage operations to some extent.

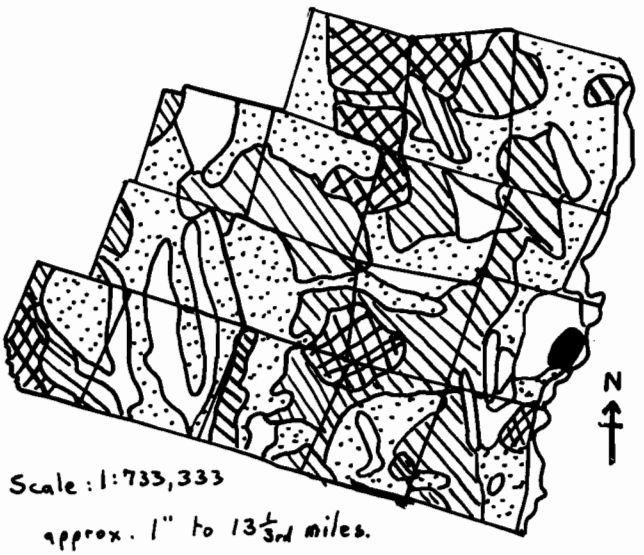
Class 3, Striped Area: Areas in which the income from agriculture has proven insufficient to provide and maintain adequate facilities for living and for the conduct of the business of farming, and in which farm properties are, generally speaking, depreciating; areas which, because of the scarcity or the inferiority of their crop and pasture land, are poorly adapted to agricultural use. This class embraces chiefly the poorer hill farming sections, but includes also scattered areas of light, sandy soils of inferior quality. Soils are mostly sandy and gravelly loams, tend to be shallow and infertile, and are nearly all acid. Stoniness and rough topography make tillage operations difficult.

Class 4, Cross-hatched Area: Areas in which no agriculture has ever been established, or in which returns from farming have been so low that land has been or is being abandoned in so far as any agricultural use is concerned; which, because of rough topography, stoniness, unproductive soils, or all three, are definitely unsuited to agriculture and adapted primarily to forestry.

Class 5, Black Area: Recreational, none mapped in Orange County. Currently the fringe of Lake Morey would appear to fit that class.

Class 6, None in Orange County: Urban, industrial.

* J.A. Hitchcock, "An Agricultural Classification of Vermont Lands", Vermont Farm Business, 4 (Dec. 1937). Reprinted in Wilgus, op. cit., (1945), p. 38-39.



a reconnaissance land classification of the state published in 1937, shows the classes of agricultural land in Orange County. Fifty-eight per cent of the area was estimated to be suitable for agriculture, which was the area under cultivation in 1960 (see Table XVIII, page 163). An attempt was made to learn what changes have occurred since Map 30 was prepared, by comparing it to Fold Map 2. The enormous difference in scale between the two maps and the lack of detailed field investigation for Map 30, rendered comparison difficult. However, it was evident that most of Class 1 and Class 2 areas are still in agricultural use. Class 3 seems to have suffered some recent abandonment. Changes in gradation between the classes could not be ascertained. Class 5, recreational area, seems to have expanded around Lake Morey. There is still no real urban or industrial area (Class 6). The cross-hatched area on Fold Map 2 represents land currently under pasture or cultivation.

Of the 1,068 farms reported in Orange County in 1960, there were 660 dairy, fifty-two livestock (excluding dairy and poultry), thirty-five general, thirty poultry, and ten fruit farms. The value of agricultural products as seen on Table XIX and compared to Table XIV, page 140, reveals a spectacular increase (over 200 per cent) in the value of dairy and poultry products since 1930. Other specialty products have declined; apple yield was down to 9,691 bushels in 1960.

The largest and most valuable agricultural enterprise is dairying. By 1960 the number of cows had increased to 17,743, on a total of 858 farms

TABLE XIX

VALUE OF AGRICULTURAL PRODUCTS, 1960, ORANGE COUNTY*

Crops		Livestock and products	
Field crops	$ 197,099	Dairy products	$ 6,260,307
Fruit crops	32,916	Poultry products	708,406
Forest products and and horticultural specialties	306,408	Other livestock products	985,005
Total	$ 536,423	Total	$ 7,953,718

* United States Bureau of the Census, Census of Agriculture: 1959, Vol. I, Part 3, (Washington: Government Printing Office, 1961), p. 112.

(only 660 of which were classified as "dairy" farms). Herd size is evenly distributed; 180 farms have herds of two to nine, 216 have herds of ten to nineteen, and 182 have herds of twenty to twenty-nine. The number of creameries has fluctuated over the years; in 1930 the county had eight, in 1940 ten, in 1950 eleven, and in 1960 seven.[1]

In 1953, Orange County had seven per cent of Vermont's dairy cows. Six plants shipped milk to the Boston market; plants receiving and shipping milk only were located in Bradford, Newbury, and Randolph (two). Those shipping fluid milk and also manufacturing dairy products were located in Bradford and East Randolph. Six other plants in the county shipped to secondary markets; those in Bradford and West Fairlee shipped milk only, while those in Chelsea, Tunbridge, Washington, and Wells River shipped milk and cream and did other manufacturing (see Table XX). Only one local Vermont dealer, in Randolph, purchased from farmers. Nine producer-dealers in Orange County were located in Bradford (two), Wells River (two), Corinth, Newbury, Randolph, Williamstown, and Thetford. The Wells River plant bought skim milk from other plants to manufacture into cheese. Most Orange County milk was shipped as fluid milk, cream, and ice cream mix (see Table XXI).[2] In 1960 dairy products were worth $ 6,260,307 in Orange County.

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[1] Vermont Year Book, 1930, 1940, 1950, 1960; compiled from information on the various towns.

[2] Robert O. Sinclair, Vermont's Dairy Industry, Vermont Agricultural Experiment Station, Bulletin 588 (Burlington, 1956), p. 23-24.

TABLE XX

DISTRIBUTION OF MILK RECEIPTS IN ORANGE COUNTY BY TYPE OF MARKETS, 1953*

Market	Number of plants	Number of producers	Hundred pounds received	Per cent
Boston	6	531	599,878	64.5
Secondary	6	324	330,881**	35.5
Local Vermont	1	4	***	
Total	13	859	930,689	100

* Sinclair, op. cit., p. 23, Table 21.

** Cream receipts converted to milk equivalent.

*** Combined to avoid revealing single plant information.

TABLE XXI

UTILIZATION OF WHOLE MILK AND SKIM MILK,

ORANGE COUNTY, 1953*

Utilized as	Hundredweight	Per cent
Whole milk:		
Fluid milk shipped	887,376	58.7
Fluid cream shipped	448,908	29.7
Ice cream mix shipped	94,187	6.2
Butter	33,979	2.2
Pounds whole milk condensed or evaporated	31,575	2.1
Milk sold locally	11,072	0.7
Cream sold locally	3,229	0.2
Ice cream mix	2,348	0.2
Total	1,512,674	100
Skim:		
Shipped	124,704	47.1
Condensed or evaporated	95,951	36.2
Otherwise	44,134	16.6
Returned to farmers	282	0.1
Total	265,071	100

* Sinclair, op. cit., p. 24, Table 22.

According to Tremblay,[3] the average Vermont dairy farm in 1957 had twenty-eight cows, fifteen heifers, and produced 6,885 pounds of milk per cow annually, measuring four per cent butter fat. The average dairy farm was 271 acres in size, with one third of its acreage in crops, another in pasture, and the remainder in woods.

Illustrations 25 - 28 depict some aspects of the dairy industry in 1961.

Manufacturing And Other Nonagricultural Employment

Table XXII compares employment categories in Orange County for 1930 and 1950. Agriculture continues to occupy a majority of the labor force, although the proportion has declined slightly since 1930. Manufacturing occupies the second largest group, over half the number in agriculture in 1950; the majority of manufacturing employees are engaged in wood products industries (see Illustration 29). Trade and service industries, transportation and communications, and professional and semi-professional services occupy the majority of the remaining labor force. Major declines from 1930 to 1950 took place in the transportation industry (mainly a reduction of railroad employees) and domestic and personal services.

In a 1955 - 1957 survey,[4] nearly forty per cent of Orange County's

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[3] Raymond H. Tremblay, Dairy Farming in Vermont, Vermont Agricultural Experiment Station, Bulletin 617 (Burlington, 1960), p. 3.

[4] Vermont Development Commission, Vermont's Changing Industrial Pattern, (Economic Research Series No. 2. Montpelier, 1958), p. 34.

Illustration 25: Dairy cows on farm on road from Randolph to Randolph Center.

Illustration 26: Tunbridge creamery.

Illustration 27: Dairy farm, Connecticut River valley, Newbury. Note round barn; according to Vermont legend this was to prevent witches from hiding in corners!

Illustration 28: Pasture of dairy farm, Strafford village.

TABLE XXII

EMPLOYMENT CATEGORIES, 1930 AND 1950*

	1930	1950
1. Agriculture	2,985	2,107
2. Forestry and fishing	64	22
3. Mining	227	217
4. Construction	300	304
5. Manufacturing (Total)	815	1,107
Furniture, lumber, wood, and paper products	322	603
Printing, publishing, and allied industries	22	32
Textiles, apparel, etc.	71	136
Food and kindred products	77	48
Machinery (incl. electrical)		97
Durable goods		120
Other	313	71
6. Transportation and Communications (Total)	649	195
Railroad employees	468	54
Telecommunications	85	46
Trucking service, warehousing and other	96	95
7. Trade and service industries	653	983
8. Professional and semi-professional services	350	632
9. Domestic and personal services	417	64
10. Entertainment and recreation	127	79
	6,587	5,710

Reference for TABLE XXII:

* Compiled from: United States Bureau of the Census, Fifteenth Census of the United States: 1930. Population, Vol. III, Part 2, (Washington, 1932), p. 1133; and Seventeenth Census of the United States: 1950. Population, Vol. II, Part 45, (Washington, 1952), p. 45-39.

Illustration 29: Lumber yard, Thetford.

Illustration 30: Sanguinetti Granite Company, Williamstown.

plants were in the one to four employee range, and another thirty per cent in the five to fifteen employee range, emphasizing the small size of most manufacturing establishments. About four ninths of all plants in 1957 were in the lumber and wood products (except furniture) category, and about one sixth and one ninth in printing and publishing, and food and kindred products respectively. Textile mill products and primary metal products, although with only one establishment to each category, were important in the county's economy as these categories accounted for the two plants in the 201 to 300 employee range.

According to data on the Vermont economy,[5] in 1957 out of a labor force of 5,415 in Orange County, 1,630 were engaged in agriculture, 1,480 in mining and manufacturing, 260 in construction, and 2,045 in distribution and services. Table XXIII shows number and value of establishments in manufacturing, trade, and services; the steady increases in value indicate that the county is economically stable at present.

The largest towns in Orange County in 1960 were Randolph, Bradford, Williamstown, and Newbury. Williamstown, with a population of 1,553, is a center for quarrying and cutting of granite (see Illustration 30, page 175). Bradford has a population of 1,619, and is located on U.S. Route 5. An electric power plant is operated on Wait's River, and electrical appliances

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[5]Unpublished, mimeographed data received from University of Vermont, Dept. of Agriculture, in 1961.

TABLE XXIII

MANUFACTURING, TRADE, AND SERVICES, ORANGE COUNTY, 1948 - 1958*

	1948	1954	1958
Manufacturing:	(1947)		
Establishments	42	53	53
Employees	614	643	856
Value added	$ 2,645,000	$ 2,877,000	$ 3,544,00
Wholesale Trade:			
Merchant wholesalers, manufacturers, sales branches, petroleum bulk plants, merchandise agents, brokers, farm products assemblers.			
Establishments	8	9	14
Sales	$ 780,000	$ 1,174,000	$ 5,406,000
Retail Trade:			
Lumber, hardware, etc., general merchandise, food stores, automotive group, gas service stations, apparel, accessories, furniture, appliances, eating and drinking places, drug stores, other retail stores, non-store retail.			
Establishments	221	204	182
Sales	$ 11,622,000	$ 13,817,000	$ 15,911,000

	1948	1954	1958
Selected Service Business:			
Lodging places, personal services, business services, auto repair, garages, miscellaneous repair services, motion pictures, other amusements.			
Establishments	101	90	103.
Sales	$ 993,000	$ 1,580,000	$ 2,003,000

* Unpublished, mimeographed data received from University of Vermont, Dept. of Agriculture, in 1961.

and mechanical devices are manufactured. The town also has a creamery and produces lumber and wood products (see Illustrations 31 and 32). Wells River village, with about one third of Newbury's 1,452 people, is a small manufacturing, business, and transportation center. A paper mill and creamery operate here, and it is the junction of two branches of the Boston and Maine railroad, one branch running south on the west bank of the Connecticut and the other running southeast through New Hampshire. U.S. Routes 5 and 302 also converge here (see Illustration 33). Randolph is the largest town in Orange County (3,414), with over twice as many people as Bradford, the second largest. It is one of the best agricultural towns in the county; has plants manufacturing wood products, underwear, dairy products, rubber stamps, sheet gelatin, and flour; is a shipping center located on the Central Vermont railroad; and is a business and service center for the surrounding rural region (see Illustrations 34 - 36).

The value of the tourist and recreation industry is difficult to estimate since no reliable, comparative statistics are kept. Table XXIII, page 177, gives some idea of the number and value of establishments connected with tourism; a sharp increase is evident from 1950 to 1960. The high value and steady increase of retail sales also reflects the increase in tourism. In 1930 in Orange County, $ 1,663,125 worth of property was being used by summer residents and tourists, and the value of tourist homes was $ 264,500.[6]

Several towns attempted in the late nineteenth century to bring people

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[6]Vermont Commission on Country Life, op. cit., (1931), p. 120.

Illustration 31: Main street of Bradford village.

Illustration 32: Log cutting operation, Route 25, Bradford.

Illustration 33: U.S. Route 5, Wells River village.

Illustration 34: Main street, Randolph village, note several retail stores.

Illustration 35: Warehouse along Central Vermont railroad, Randolph.

Illustration 36: Near Central Vermont railroad, Randolph.

back from the cities by running "Old Home Weeks"; former residents often gave money to town projects and temporary business was attracted. In 1961, several of the towns among the New Hampshire grants of 1761 were staging bi-centennial celebrations (see Illustrations 37 and 38).

Some artists and writers spend the summer at Thetford Center (see Illustration 19, page 130). Many towns, especially in the interior of the county, make no attempt to attract tourists or even to service highway travelers; in field trips there was a very noticeable lack of eating places and service stations!

Fairlee is the only town whose main income is based on tourism and recreation. This town, located on Route 5, has the distinct advantage of being the location of the large and lovely Lake Morey. Many wealthy people own summer homes here; several summer camps for boys and girls are located on the lake; and the exclusive Lake Morey Inn caters to an elite clientele. The village street abounds with service stations, antique shops, and small stores supplying summer tourists needs (see Illustrations 39 - 44).

Other towns along Route 5 are beginning to cater to tourists (see Illustration 45 and 46). No major ski resorts have been developed in the county, but rope tows are operated on several hills.

Transportation Development To 1960

Since 1930 the use of the railroad has declined as motor transport on

Illustration 37: Banner advertising Tunbridge's bi-centennial, 1961.

Illustration 38: Advertisement for Fairlee's 1961 bi-centennial.

Illustration 39: Lake Morey, Fairlee.

Illustration 40: Lake Morey Inn, Fairlee, an exclusive resort hotel.

Illustration 41: "Wild Animal Farm" on U.S. Route 5, near Ely, Fairlee, an attraction for child tourists.

Illustration 42: U.S. Route 5, Fairlee; note four service stations, antique shop, etc.

Illustration 43: Tourist services, Fairlee. Note center building, "Hotpoint Appliances". June 1961.

Illustration 44: Same as above, note that "Hotpoint Appliances" store has been converted to an antique shop to better serve tourists desires. June, 1962.
"The Palisades", a 900 foot level, is in background.

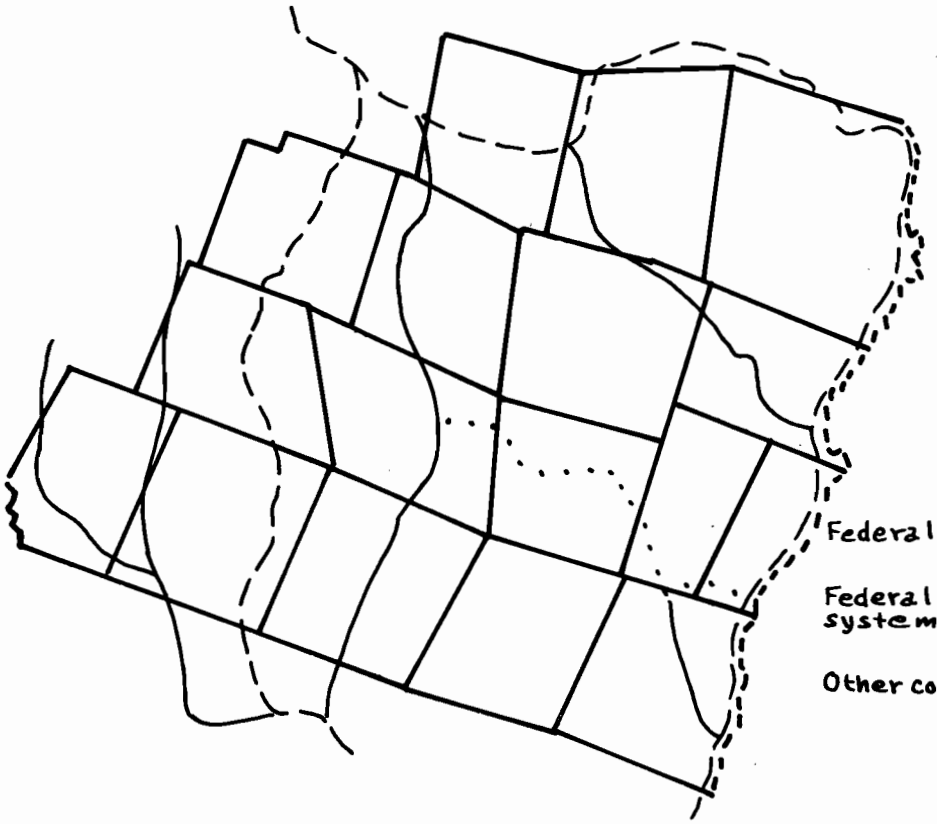
Illustration 45: Motel and crafts shop, U.S. Route 5, Bradford.

Illustration 46: "Grandad's Toy Shop", U.S. Route 5, North Thetford.

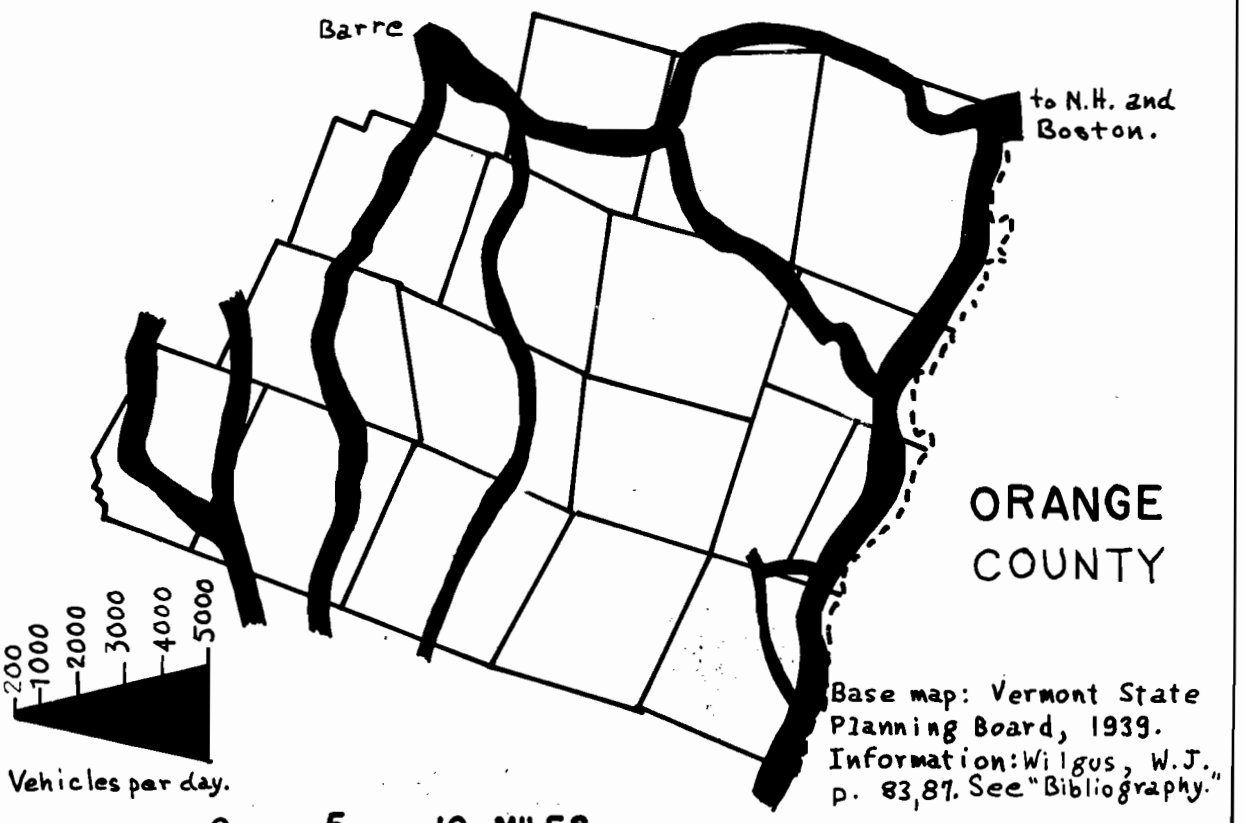
highways increased. The railroad had a beneficial influence on industrial growth and made possible the agricultural emphasis on perishable products in need of rapid transport to large cities. The state treasury benefited through taxation of railroad properties; the railroad also connected Canada with warm water ports and served as a "differential" route to the west from New England.

With the coming of the railroad in about 1850, the building of highways lapsed until the 1890's when public interest was aroused. State assistance was initiated; in 1917 Federal Aid to highways was begun and Vermont took over control of state highway development. After 1920 the motor truck and bus came into use; by 1930 highway transport had become a major railroad competitor. Maps 31 and 32 show the principal highways and density of flow in Orange County; the flow on U.S. Route 5 is particularly great in the neighborhood of industrial centers and where traffic in large volume flows to and from New Hampshire, Massachusetts, and Canada. Important roads from Montpelier to White River Junction run through Orange County. Traffic is mostly interstate, leading to and from destinations outside of the state. East-west transport within Orange County is difficult, with no major routes running in this direction; this is due to the fact that most of the highways follow the north-south trending stream valleys.

PRINCIPAL HIGHWAYS IN ORANGE COUNTY



HIGHWAY FLOW MAP, 1940



MAPS 31 & 32

Immigration Of Foreign Born Into Orange County[7]

The proportion of foreign born population is lower in Vermont than in industrialized states. During the early 1800's the trend showed a decline in Irish, British, and English Canadian immigrants, and an increase in French Canadian, Italian, Swedish, Polish, Russian and Spanish. Between 1830 and 1840, Irish and French Canadians were moving into the more industrialized towns; of about 2,000 moving into Vermont, some moved to Randolph. In the census of 1850 there were 15,000 Irish and 14,000 Canadians in Vermont, many of whom came to build the railroads. In 1850 there were 1,147 (4.2 per cent) foreign born in a population of 27,296; 575 of these were in Vershire, Newbury, and Randolph presumably engaged in copper mining and railroad construction.

French Canadians were emigrating from the Province of Quebec due to the high birth rate there and the opportunity for better jobs in Vermont. They were not always welcome in "Yankee" Vermont, and most moved on to factories in southern New England. In 1900 13.1 per cent of Vermonters were foreign born; in order, French and English Canadians, Irish, English, Welsh, Scandinavian, and Italians. In Orange County, 1,287 (6.7 per cent) of the population of 19,313 were, in order, English and French Canadian, English, Scottish, Irish, Polish, Italian, Swedish, Russian, Austrian, Danish, and Welsh. By 1920 French Canadians outnumbered all other groups of foreign born farmers; there were 2,633

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[7]This section is based on information compiled from the United States Census for the years mentioned; full information on volumes and pages consulted may be found in the Bibliography.

in Vermont. In 1950 the rate of foreign born in Orange County had decreased to 4.7 per cent (808 out of 17,027); French and English Canadian, English and Welsh, German, Scottish, Italian, Irish, Swedish, Finnish, Czechoslovakian, French, Greek, Danish, Norwegian, Polish, Lithuanian, and Russian.

Settlement Pattern

In an attempt to describe the settlement pattern of Orange County, a manuscript map of the whole county on a scale of 1:62,500, showing all roads and buildings, was prepared from six United States Geological Survey (U.S.G.S.) maps covering the county (see Cartographic Sources, page 217); three of these maps were published in 1957, the other three in 1931, 1935, and 1944. The manuscript map was then compared to the maps of each town in F.W. Beers, Atlas of the County of Orange, Vermont, (New York, F.W. Beers & Co., 1877), and all roads shown on Beers' maps which did not appear on the U.S.G.S. maps were recorded as abandoned roads. It is assumed that the houses on these former roads, still marked on the U.S.G.S. maps, have also been deserted.

The early settlement pattern of Orange County, which remains to a large extent unchanged, was one of evenly distributed rural farms typical of New England areas settled in the late eighteenth century. At this time, proprietary grants were usually allotted in a single large holding, thus inhibiting development of the compact, nucleated settlements characteristic of seventeenth century New England when proprietary grants were fragmented and all house lots were located

within a small area. In Orange County, small nucleated rural service centers developed to meet the needs of the dispersed agricultural population. These villages, of which there are two to seven in each township, usually had sites in stream valleys near power sites and transportation routes; the several early hill villages declined in the late nineteenth century as has been discussed in Chapter VI.

The change in settlement patterns from 1877 to 1931-1957 is one of degree only. Orange County is still the second most rural county in Vermont; Sinclair reported in 1956 that only twenty-one per cent, or approximately 3,600, of its residents live in the villages.[8] In 1950, 3,518 people are reported as living in the three villages of Randolph, Bradford, and Wells River (Newbury).[9] Since there are over forty villages in Orange County, there appears to be a discrepancy in the foregoing figures, but it is clear that there are only three large villages, representing regional service centers, in the county; they show a decidedly nucleated form. The numerous other villages, rural service centers, appear on the map as linear groupings of several buildings along a major highway. The remaining four fifths of the population still live in evenly distributed rural dwellings. The roads and houses abandoned between 1875 and 1931-1957 are well scattered. Many of the former roads were through areas never settled,

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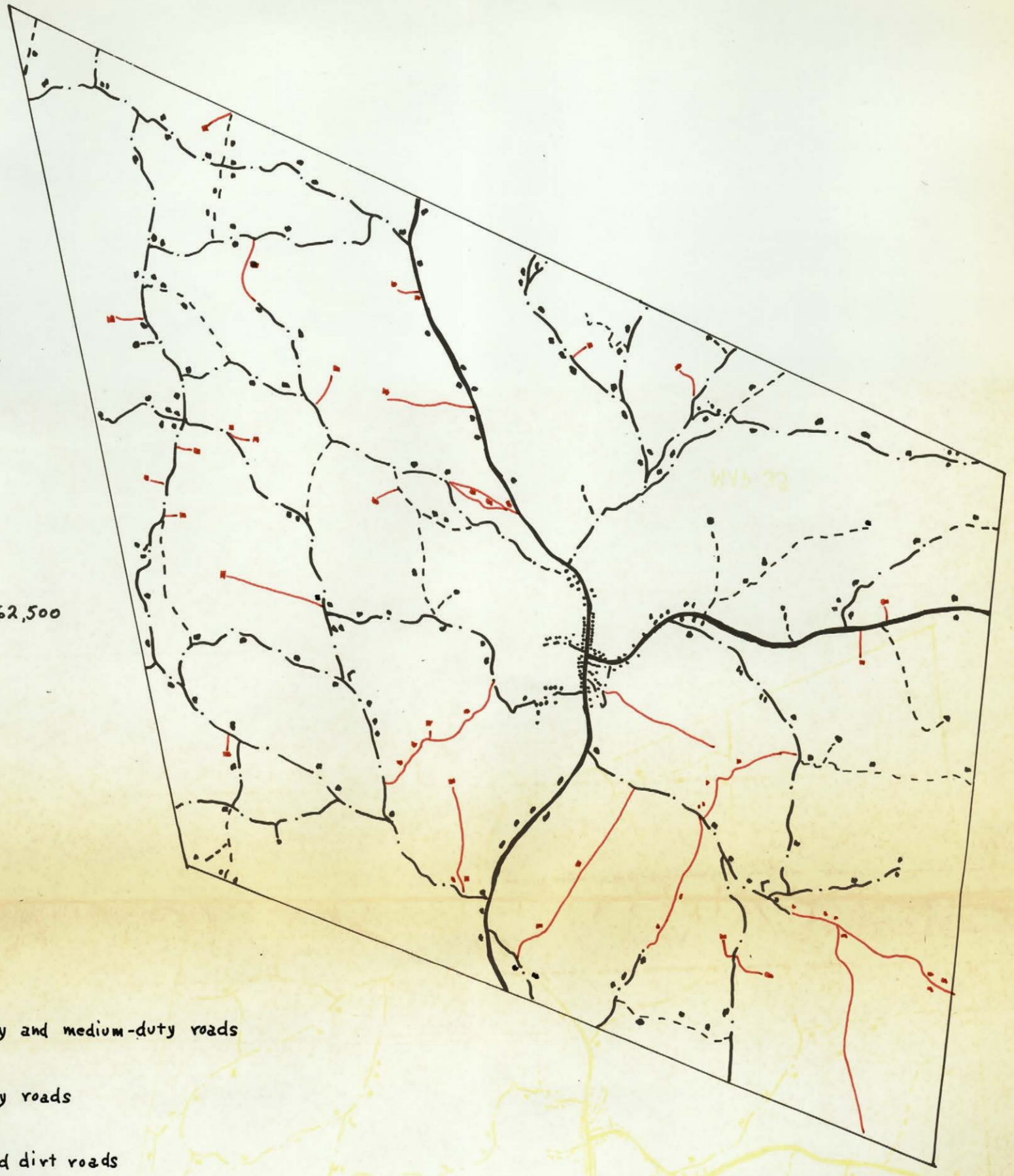
[8]Sinclair, op. cit., (1956), p. 23.

[9]United States Bureau of the Census, Seventeenth Census of the United States: 1950. Population, Vol. II, Part 45, (Washington, 1952), p. 45-7.

connecting isolated farms on land now abandoned; other abandoned roads and houses are in areas still under cultivation reflecting the consolidation of farms. The general trend seems to be a pulling in of road "tentacles" and continued settlement along the better roads. Some of the roads listed on the U.S.G.S. maps as "unimproved dirt" may now be abandoned also.

Settlement maps of two representative towns have been extracted from the unwieldy manuscript map for illustrative purposes; reference to Map 4, page 17, will show the towns in relation to the rest of the county. Map 33 is of Chelsea, a relatively isolated township with a population which has been declining steadily since its 1830-1850 maximum, representative of the majority of the towns in the county. Map 34 shows Randolph township, in many ways unique in the county, but also representative of the other small manufacturing or recreation towns located on railways through the county, such as Bradford, Fairlee, Wells River village, and Williamstown (not on a railroad), which have not lost population in the twentieth century.

Chelsea was first settled in 1784 along the First Branch of White River; it became the county seat in 1796. Road transportation was available up the river valley shortly after settlement, but no railroad ever came through the town although there were hopes among the residents that an extension would be built north from South Royalton or south from Barre. Population was highest from 1830 to 1850 when it remained stable at approximately 1,950; steady decline set in after 1850 and in 1960 only 957 people remained. At the most populous time,



CHELSEA

SCALE: 1:62,500

KEY:

Heavy-duty and medium-duty roads

Light-duty roads

Unimproved dirt roads

Roads and Houses abandoned 1877-1957

Buildings, 1957

MAP 33

the people were mainly engaged in agriculture, but also operated a cloth dressing and fulling mill and a tannery, manufactured boots and shoes, and did some stone cutting using local granite. County business has been administered here. The decline in population has been attributed to isolation from railway transport; in 1848 and 1849 the Central Vermont railroad up the Third Branch of White River and the Connecticut and Passumpsic Rivers railroad up the Connecticut River diverted business to Randolph and Bradford. With the rise of the factory system in southern New England in the late nineteenth century, the small industries of Chelsea were forced out of business; a creamery established in 1892 and the concurrent establishment of a few small wood processing industries provided a few jobs for the nonagricultural population. Today the creamery, wood industries, county administration, and a few retail stores complement the remaining agricultural population. In 1895, when the population was still over 1,200, it was thought that probably as many houses in town were occupied as ever, but that families were smaller and more of the people were elderly or retired.[10]

The present settlement pattern in Chelsea (see Map 33) still consists of evenly dispersed rural farmsteads, with the village, a small rural service center appearing as a linear concentration in the stream valley along Vermont Rte. 14 near the junction of the road east to Vershire. A large number of roads (relative

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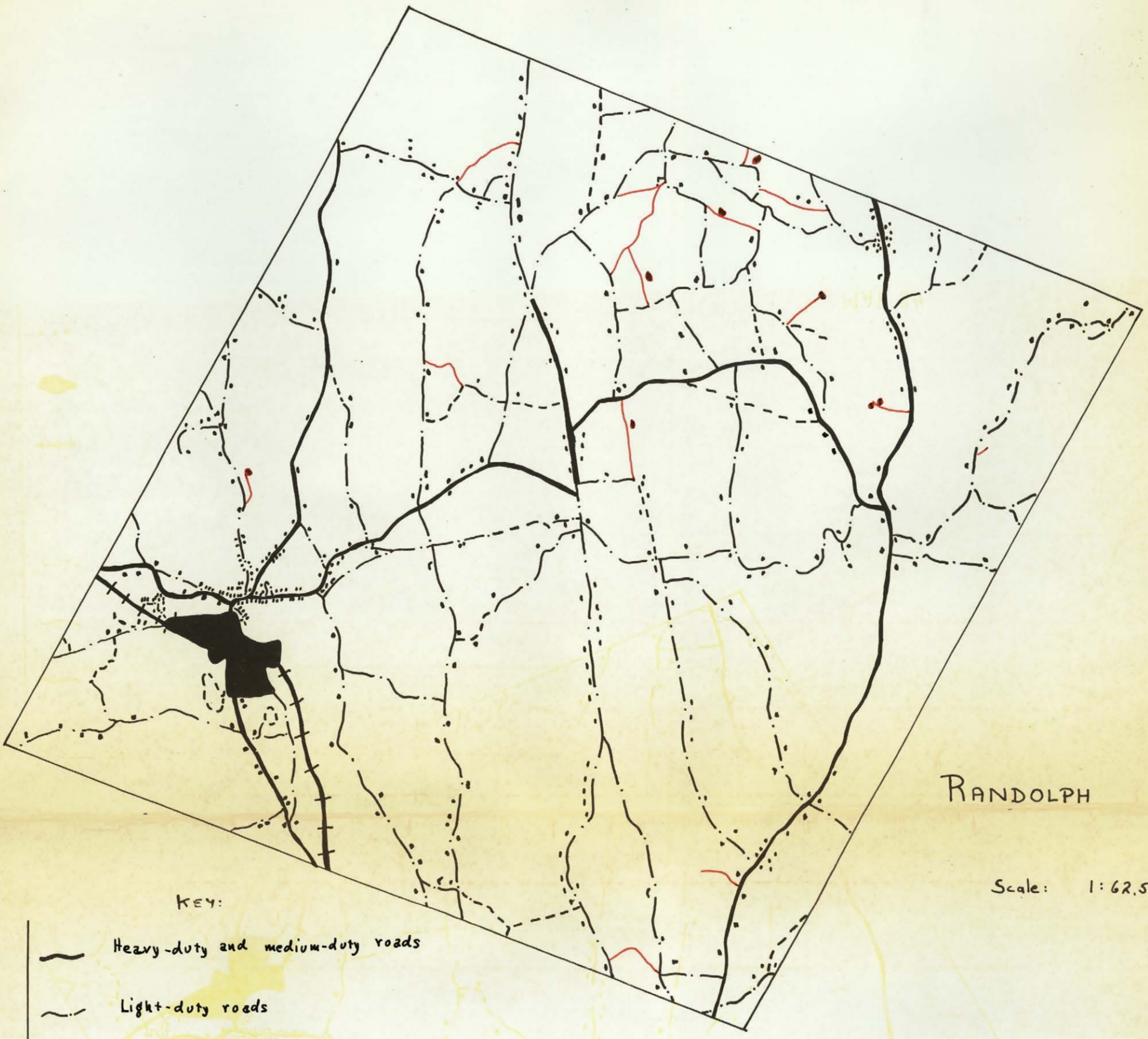
[10]Story in Herald and News (Randolph, Vt.), Dec. 5, 1895.

to the number in Randolph) have been abandoned between 1877 and 1957 (the date of the maps covering Chelsea), mainly in the southeastern part of the township, a hilly area isolated from good roads.

The township of Randolph presents a marked contrast to Chelsea (compare Maps 33 and 34). Randolph was first settled in 1777, and due to its comparatively fine agricultural possibilities it has always been the largest town in the county. Population has increased fairly steadily from the beginning, with a small decline (less than nine per cent) between 1830 and 1860; the maximum population, 3,499, was attained in 1950 and had dropped by only eighty-five in 1960. The early economy of the town was based on agriculture; sheep raising was more extensively developed here than anywhere else in the county. The usual early industries of wool processing, stone cutting, leather manufacturing, and iron forging were carried on until 1870 when they declined due to competition from southern New England factories. After 1860 the influence of the railroad was felt, and Randolph became a regional service center, the location of several small manufacturing establishments, retail stores, and distribution services connected with its location on the railroad and a major highway.

The present settlement pattern (see Map 34) is dominated by the nucleated village in the southwestern corner of the township on the Central Vermont railroad and on Vermont Route 12 leading north to the state capital at Montpelier. Small concentrations of several buildings indicate the rural service centers of South Randolph, East Randolph, North Randolph, and Randolph Center. The last-



RANDOLPH

Scale: 1:62,500

KEY:

- Heavy-duty and medium-duty roads
- Light-duty roads
- Unimproved dirt roads
- Roads and houses abandoned 1877-1957
- Central Vermont Railroad
- Randolph Village
- Buildings 1957

mentioned village, in the geographical center of the township 1,300 feet above sea level, was the largest village in the township before the advent of the railway. A few deserted roads and houses are evident; most of these are through areas still under cultivation, probably due to the consolidation of small farms.

Thus the two townships of Chelsea and Randolph illustrate the three forms of settlement in Orange County: the dispersed rural farmstead, the rural service center, and the regional service center.

Chapter IX

CONCLUSIONS

The emphasis of this study has been placed on the analysis of factors which have determined the evolution in numbers and distribution of the inhabitants of Orange County, Vermont. This county was first settled during the inland expansion of the English frontier from its Atlantic seaboard confines after the establishment of English sovereignty in North America in 1760. The territory now Vermont, a warpath during the French and Indian Wars which took place between 1744 and 1759, was also an object of dispute between the colonies of New York and New Hampshire, both of which claimed the territory. Disputation ended when Vermont became independent in 1777, and achieved statehood in 1791. By this time, many towns in Orange County had already received grants from New Hampshire and/or New York, and settlement had commenced in most towns. Orange County, like so much of northern New England, was unsuitable for the support of a dense agricultural population; the topography was rough, the soil relatively unproductive, and the climate not totally reliable since killing frosts sometimes occurred during the growing season.

The First Stage In The Evolution Of Settlement In Orange County

The period of settlement expansion within Orange County took place between 1760 and 1840. Settlement was delayed until this date owing to the

Indian danger in Vermont during the French and Indian Wars, and the continued availability of agricultural land in southern New England. The original settlement of large numbers of farmers in northern New England was largely due to the obstructions and uncertainties of westward expansion of the growing population of southern New England during the late eighteenth century. After 1760, settlers from agriculturally overcrowded areas of Massachusetts and Connecticut arrived in Orange County on foot, horseback, and by boat, following the Connecticut River and its tributary stream valleys. The attractive, inexpensive land of Vermont was distributed through land companies modeled after the proprietors who had distributed land in Massachusetts in the seventeenth century. Many of these companies were composed of speculators as is evidenced by the discrepancy of several years between the dates of town grants and first settlement, and the lack of settlement in the towns by members of the land companies. In chosing sites for settlement, the advantages of stream valleys, water power sites, and level, timbered uplands all attracted people. Settlement expanded from the Connecticut River westward, up its tributaries Waits River, Ompompanoosuc River, and White River and its branches.

The frontier economy was mainly based on self-sufficient agriculture for the first few decades; the lack of technical knowledge and equipment among the pioneer farmers impeded the productive settlement of Orange County. The farmers had no way of knowing the soil was relatively infertile and would

need careful farming and fertilizing to produce reasonably good crops. It was an early pioneer myth that any soil supporting a dense growth of forest was fertile; indeed the collection of humus for hundreds of years in the topsoil made it deceivingly productive for the first few years of cultivation. Agricultural implements were handmade and clumsy, and agricultural methods such as crop rotation and systematic fertilization were not widely practiced. By 1810, a transition to commercial agriculture was in progress; farm surpluses were transported over crude transportation routes to markets in Boston, Hartford, and other southern New England cities. The transition from mixed, self-sufficient farming to specialty, commercial farming advanced rapidly; by 1840 the widespread and successful enterprise of sheep raising was able to support 27,873 people, the maximum population attained in Orange County. Thirteen towns in the county reached their highest populations between 1830 and 1850; only a few have gained population since that time. More land was in agricultural use in the middle nineteenth century than at any other time; only the very rough areas and those at high elevations were not used.

The Second Evolutionary Stage

Orange County's population peak was followed by a period of rural depopulation and land abandonment which began with the decline in numbers of sheep raised in the late 1840's and lasted until 1930; during these years the population declined from 27,873 to 16,694. Part of this reduction was a natural

result of the decrease in family size with the decline of self-sufficient agriculture, but the major reduction in population was caused by mass emigration from Orange County.

The earliest outward movement of people, which occurred approximately from 1840 to 1890, was mainly comprised of the displaced farmer in search of a new farm in the west, although the growing textile industries of southern New England took their share. Ironically, the revolution in agriculture which occurred in the middle nineteenth century and which might have improved conditions in Orange County, only accentuated the marginal agricultural potential of the county, for the terrain was ill-suited to large scale mechanized farming. The prairies of the western United States were ideally suited for mechanized, commercial agriculture, and when these lands were settled and farmed extensively the proportion of farmers necessary to feed the population declined. As western agriculture expanded, the New England farmer was unable to compete effectively in the national market; thus Orange County was unable to support a heavy commercial agricultural population. The competition of western farms successively limited the potential of such adjustments as mixed farming, sheep farming, and the manufacture of butter and cheese.

From 1890 to 1930, although westward movement of people from northern New England continued, the major attraction for the emigrant was more definitely the southern New England city. The agricultural revolution had released a large

surplus labor force from rural New England; manufacturing industries had developed in southern New England and persuaded large numbers of Vermonters to abandon unprofitable farms for factory jobs. Orange County was located well beyond this industrialized area, far from the main routes of railroad transportation established in the first half of the nineteenth century.

A large percentage of the population reduction in the late nineteenth century was attributable to the decline in the copper mining industry in Vershire, Strafford, and Corinth, between 1880 and 1890. Associated service industries in these three towns, along with those provided in the neighboring towns of West Fairlee and Thetford where many mine workers had resided, were put out of business and added emigrants to the stream of departing mine workers.

Internal migration within the county was also in progress; people were moving from hill areas to valley locations. The disadvantages of the many hilly farming areas settled during the period of self-sufficient farming became overwhelming with the transition to commercial agriculture which required good transportation available only in the stream valleys. The need for water power for the operation of the increasing number of small manufacturing also necessitated stream valley locations, which often became the nuclei for rural service centers.

During this period of depopulation and land abandonment, the economy of Orange County underwent many adjustments in an attempt to stem the rising tide of emigration.

The main trend in agriculture was a decline of mixed farming in favor of production of perishable agricultural goods moved by rapid railroad transport to markets in southern New England cities. Early specialties (1840 to 1880) were livestock, orchard products, cheese, butter, and, by 1870, fluid milk. From 1880 to 1930 the trend toward specialization continued. Farm sizes increased with the consolidation of smaller farms whose owners had emigrated, and consequently the number of farms decreased. Dairying had become the major specialty; production of fluid milk for the Boston market increased and production of butter and cheese declined. Livestock, poultry, orchard, and forest products increased in value.

The first railroad into Orange County was not built until nearly 1850 and even then most of the movement was through traffic. The railroad increased the ability of the farmers to produce perishable goods for city markets, but also increased the growth of manufacturing centers south of Orange County which in turn continued to draw rural people to factory jobs.

Small manufacturing enterprises always operated in Orange County; by 1840 manufactured goods included the products of sawmills, gristmills, oil mills, and woolen mills, starch, and leather products; from 1860 to 1870 there was an increase in production of copper and lumber products. By 1880-1890, the manufacture of woolen products had declined with competition from cheaper goods produced elsewhere, and the manufacture of leather and steel products had

decreased due to competition from the factory system established in southern New England at that time. These declines were compensated by the expansion in manufacture of wood products, cheese, and butter. By the late nineteenth century a trend toward manufacture of wood and food products was established and remains dominant at present. In the early twentieth century, tourism was developing, most notably in Fairlee.

The changes in the economy of Orange County, and the decline of population, are evident in the large areas of marginal land abandoned in rough and inaccessible locations between 1840 and 1930.

Evolution To The Present

During the 1930's, after nearly 100 years of population decline, Orange County seems to have become demographically and economically stable. Between 1930 and 1960 the population declined by only eighty people, but internal shifting occurred. Rural areas are declining in population, while the larger villages are increasing in size. Income is still dependent on agriculture, mainly the production of fluid milk which is shipped by motor transport (since 1930) to the Boston market. Poultry and forest products have increased in value while orchard products have decreased.

A slight increase is evident in the proportion of manufacturing to agricultural employment. Manufacturing activities are limited in their labor

requirements; nearly forty per cent of the plants employ four or less workers. Four ninths of all establishments are engaged in manufacturing wood products, but textile and primary metal products are also important. The steady increase in value of manufacturing, trade, and service industries, reflects economic stability. Tourism provides an increasingly important source of income for proprietors of lodging places, the owners of entertainment and restaurant facilities, and retail stores.

Owing to the dominance of agricultural employment, and the original system of consolidated land grants, the settlement pattern is still composed of dispersed farm dwellings. Over forty rural service centers form small nuclear lineations, usually in stream valleys, while the three larger regional foci of Randolph, Wells River, and Bradford villages form greater concentrations.

Although the present economic activities dominate the landscape of Orange County, the influence of past activities is indelibly imprinted upon the face of the county. The large areas of farm land abandoned in the past 120 years may still be identified in the various stages of second growth forest. Thus in its settlement forms, its agricultural economy, and its diverse areas of re-generating natural vegetation, the demographically stable Orange County of today records the influence of colonization and depopulation which occurred between the years of 1760 and 1930.

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Wilgus, W.J. See Bibliography. Information for Maps 31 and 32.

Map 7

Information from: Child, H., p. 9, and Hall, B.H., p. 4-5; see Bibliography for full references.

Map 21

Information on the location of the first settlements in each town was compiled from the following sources:

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Map 22

Information was interpolated from:

a) location of areas never settled, Fold Map 2;
b) information contained in Map 21;
c) population statistics for each town for 1790 which provide some indication of the amount of land settled.

Fold Map 1

Contour lines from U.S.G.S. quadrangle sheets (see above), reduced to 1:125,000.

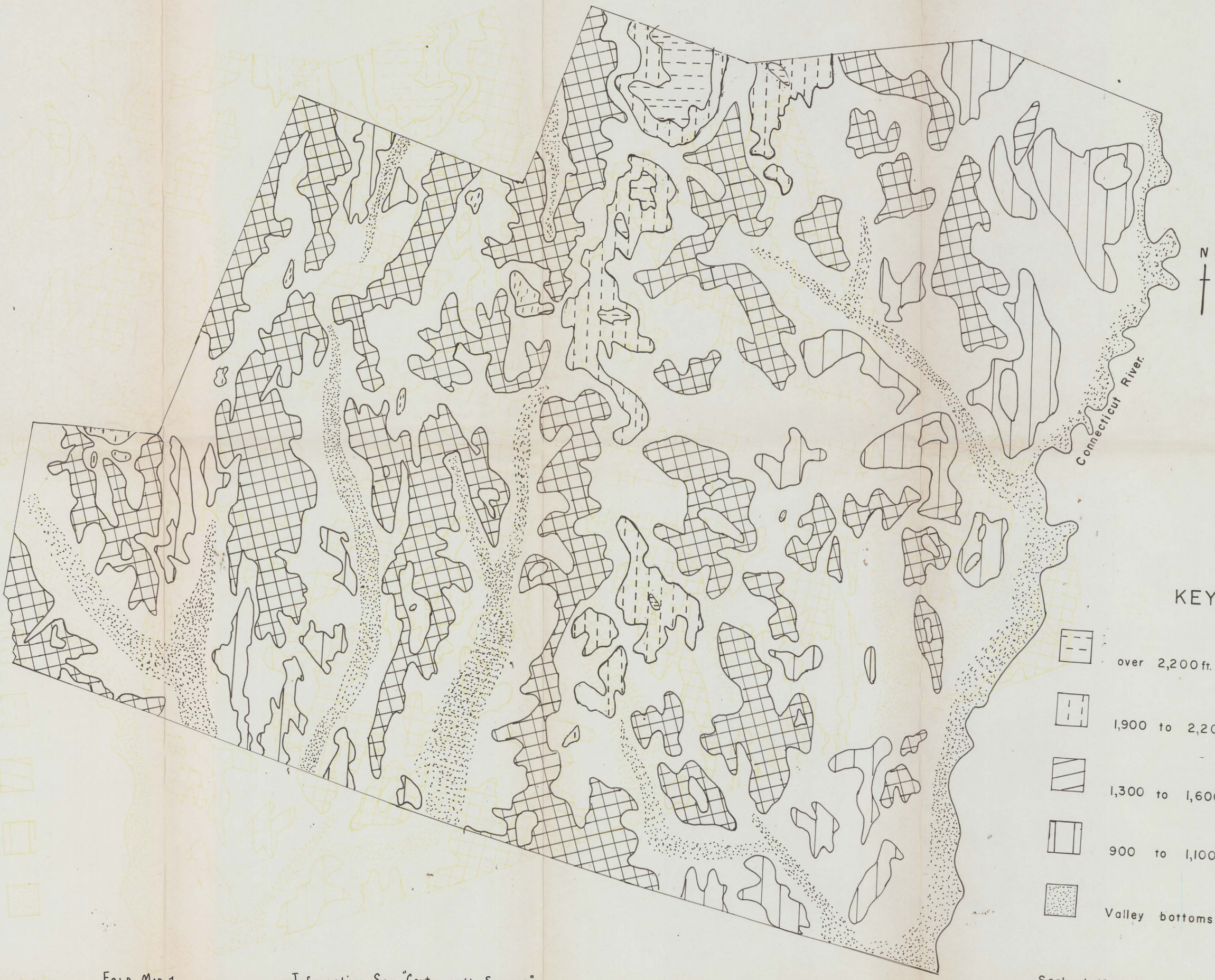
Fold Map 2

Base map from U.S.G.S. quadrangle sheets (see above); information from U.S.G.S. aerial photographs (see above).

Figure 4

Information compiled from statistics given for each town, listed alphabetically in Hayward, J., see Bibliography.

LOCATION & EXTENT OF THE MAJOR SURACES OF ORANGE CO.



FOLD MAP 1

Information: See "Cartographic Sources"

Scale: 1:125,000.


ORANGE COUNTY VERMONT
— PAST and PRESENT LAND USE
LEGEND
ORIGINAL FOREST
REVERTED TO FOREST 1840-80
ABANDONDED LAND, NOW SCRUB FOREST 1880-1930
RECENTLY ABANDONDED 1930-60
IN USE: PASTURE & CULTIVATED
RIVERS, STREAMS
ROADS PRIMARY
SECONDARY
LAKES
Information and base map: see "Cartographic Sources" page 218.
SCALE 1:62·500
0
1
2
3
4
5
ORANGE
TOPSHAM
NEWBURY
WILLIAMSTOWN
WASHINGTON
CORINTH
BROOKFIELD
BRADFORD
CHELSEA
VERSHIRE
BRAINTREE
RANDOLPH
WEST FAIRLEE
FAIRLEE
TUNBRIDGE
STRAFFORD
THETFORD
LAKE MOREY
LAKE FAIRLEE
WELLS RIVER
CONNETICUT RIVER
WAIT'S RIVER
WHITE RIVER
RANDOLPH