

*New Jersey's
Revolutionary Experience*

2

*The Mapping of
New Jersey in the
American Revolution*

JOHN P. SNYDER

New Jersey Historical Commission

NEW JERSEY'S REVOLUTIONARY EXPERIENCE

Larry R. Gerlach, *Editor*

This series of publications is dedicated to the memory of Alfred E. Driscoll, governor of New Jersey from 1947 to 1954, in grateful tribute to his lifelong support of the study and teaching of the history of New Jersey and the United States. He was a member of the New Jersey Historical Commission from 1970 until his death on March 9, 1975.

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**THE NEW JERSEY AMERICAN REVOLUTION
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Foreword

New Jersey's Revolutionary Experience is a Bicentennial pamphlet series published by the New Jersey Historical Commission with a grant from the New Jersey Bicentennial Commission. The twenty-six numbers and two teachers' guides are intended to acquaint secondary school students and the general public with the state's history during the era of the American Revolution. Some titles treat aspects of the Revolution in New Jersey, while others show how important themes of the colonial period developed during the revolutionary years; some bring together the results of existing scholarship, while others present the findings of original research; some are written by professional historians, and others by laymen whose investigations of Jersey history exceed avocation. Because the series is directed to a general audience, the pamphlets have no footnotes but contain bibliographical essays which offer suggestions for further reading.

New Jersey's Revolutionary Experience is the product of a cooperative venture by numerous individuals and agencies. On my behalf and that of the pamphlets' readers, I accord recognition and appreciation to the individual authors for their contributions to New Jersey history, to the New Jersey American Revolution Bicentennial Celebration Commission and the New Jersey Historical Commission for their support of the project, to Hank Simon, president, Trentypo, Inc., for his invaluable suggestions and cooperation in producing the series, and to the staff of the Historical Commission: Richard Waldron, Public Programs Coordinator, who as project director supervised the series from commencement to completion; Peggy Lewis, Chief of Publications and Information, and Lee R. Parks, Assistant Editor, who edited and designed each number; and William C. Wright, Associate Director, who contributed valuable suggestions at every stage of production.

Larry R. Gerlach
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Mapping Before the Revolution

For over fifty years, free, excellent maps of New Jersey with all major roads have been available at almost any gasoline service station in the state. For a modest price, accurate maps may be purchased in stationery stores, or—if greater scale and precision are required—from the state or federal government.

During the American Revolution such precision did not exist — at any price — in any map of New Jersey or of an area even as large as a county. This was partly because there were so few in New Jersey who really felt the need for accurate maps beyond property-line maps for the landowners. Of perhaps greater importance, mapping was very difficult in a land which was still fairly new to the surveyor.

The modern surveyor has available a careful century-old, statewide survey, updated by the government; he also has numerous local surveys, precise electronic or optical surveying instruments, aerial photography, and even satellites sending back detailed images. The surveyor of eighteenth century New Jersey had almost no earlier surveys of the area but worked afresh with a long heavy chain, stakes, a compass, and a flat board or plane table mounted on a tripod and marked for sighting directions. The survey crew stretched the chain from stake to stake to determine distances. To measure across ravines and lakes, they could use these tools with a system called triangulation, but for the most part they had to walk across the entire area in order to get the information necessary to draw a map.

New Jersey has many kinds of topography for such a small area. The densely-forested hills of northwest Jersey and a winding,

often swampy seashore compounded the problems of the poorly mapped young colony seeking to impose European traditions of towns, roads, and boundaries on land communally respected by the Lenni Lenape Indians. In a region as covered with woods and hills as New Jersey, it took great effort to survey with much reliability. The tools were limited in accuracy, and the surveyor often had great difficulty trying to check for errors.

Once the surveyor had measured the direction and distance of each structure, each turn in the road, each hilltop, and each bend in a stream from other reference points, he could plot them on a piece of paper with a suitable scale. A map maker could then take several surveys by different crews, with widely varying accuracy — depending on the difficulties encountered with weather, terrain, and tools — and assemble them into a map of a larger area. Some points might be located from latitudes and longitudes established by observing the stars.

The map maker would be almost as likely, however, to work from an old, inaccurate map which was more readily available. A few new towns and other names could be added; an error in part of it could perhaps be corrected using a better map of that portion by someone else. The map would then probably be published as the new map maker's own work. Several maps could form an atlas, a term first used in the sixteenth century for such a collection.

These maps, often beautiful but inaccurate, were not intended for the average person. They were often treated as works of art and generally had limited use in traveling. In a society in which traveling was slow and difficult, there was little incentive to prepare detailed road maps, and the situation would not change until George Washington's military needs spurred the first extensive road maps of New Jersey which contained any real degree of accuracy.

In the beginning of New Jersey, it was an accomplishment to provide even a reasonable outline of the region on a map, much less its internal features. Until 1610, New Jersey's coastline itself did not appear recognizably on a map. A map drawn at about that date, following Henry Hudson's explorations, has a shoreline crudely showing Sandy Hook, the Navesink inlet, Cape May, and Delaware Bay. Dutch maps of the next forty years began to dot the coast with islands and to detail the Delaware River (then called the *Suydt* or South River) with branches. There were two reasons for Dutch mapping interest in the area: the New Jersey region was under

Dutch control as New Netherland for many years, and the Dutch map makers ranked at the top in the quality and quantity of maps produced in this period.

One of the Dutch maps, published about 1656 by Nicolas J. Visscher, portrays all of what would become the northeast United States, but it is a landmark map for New Jersey in particular. When the king of England decided in 1664 to assert his claim to a large portion of the eastern seaboard, including New Netherland, he deeded the land to his brother, the duke of York. The duke proceeded to name part of it New Jersey and to grant that part to his court friends John, Lord Berkeley and Sir George Carteret. The Visscher map is believed to be the one which the duke of York used to determine the boundaries of New Jersey. Unfortunately the map led him to make a serious error in the northern boundary. The map shows a nonexistent branch of the Delaware River with its mouth at a particular latitude. The duke began his northern boundary at the mouth of this branch, identifying it by latitude, and called for a straight line from there to a point on the Hudson River.

For a full century New York and New Jersey argued about whether they should go by a real branch of the Delaware River (and, if so, which branch?) or by the latitude. In 1769 a special commission decided that the duke meant the mouth of what is now called the Neversink River at Port Jervis, New York, and decreed a straight line from there to the Hudson. The line was run on the eve of the Revolution — in 1774 — and this is the line which now marks Jersey's northern boundary. There was one more problem, not discovered for another century: the "straight" line was crooked. The magnetic iron ore in the Jersey Highlands upset the magnetic compasses used in the survey, and the actual line deviates up to a half mile south of a straight line between the two end points. Any good, large, present-day map of New Jersey will show this, if it is held almost edgewise while the observer sights along the northern boundary.

In 1675, New Jersey was honored with the first map showing only the colony itself, published by John Seller, an English cartographer. About 1700, another Englishman, John Thornton, published a New Jersey map quite different from Seller's. Both maps portray New Jersey with poor outlines, and though they give

very little detail within the colony they freely show hills throughout flat south Jersey. Local surveys were beginning by 1685, however, and in 1749, the shape of New Jersey on paper could at last be called reasonably accurate in a map by Welsh-born Lewis Evans, who settled in Pennsylvania and became quite friendly with Benjamin Franklin. Crude county boundaries covering the entire province could also be seen for the first time in Evans's map. Surveys of new roads began to be recorded extensively after 1760, but there were many earlier roads with no existing surveys. A detailed survey of the upper Delaware River was made in 1769.

Mapping as the Revolution Began

A larger but less accurate map of the Middle Atlantic area appeared about 1768, with the name Samuel Holland boldly displayed as author (Holland, a British surveyor general who helped settle Jersey's northern boundary, later claimed his name was misused).

William Faden of London produced the most famous of all the early maps of New Jersey. It is larger than either the Evans or the Holland map — twenty-two-by-thirty inches just for New Jersey. It is beautifully engraved with carefully-shaded hills and an attractive illustration. Its two editions are dated 1777 and 1778, in the midst of the Revolution! The last feature alone is enough for many history buffs, but the map is unfortunately no more accurate than the earlier map by Evans. It has errors of up to twelve miles, the Delaware River bends too sharply, most of its county boundaries are either very rough or seriously in error, and its roads are shown as nearly straight lines between towns. It was hardly a map to guide troop movements or the individual traveler.

The map was part of Faden's *North American Atlas*, which had some thirty-five maps of the various eastern seaboard provinces from Quebec to Florida. In Faden's defense, he did well with what he had. Road surveys were still largely nonexistent or unavailable to a British map maker. Surveys of natural features were still fewer.

The Faden map did make use of some more recent surveys. One was made in 1769 to help the Boundary Commission settle the dispute over New Jersey's northern line. The survey was by Bernard Ratzer, a British lieutenant who prepared a simple map from his findings. New Jersey was shown in outline, and the road

from Paulus Hook (now part of Jersey City) to "Trentown" was marked, but the map was otherwise limited to the boundary line and some survey lines and rivers. Faden also referred to an extensive survey by Gerard Bancker, who later became treasurer of New York State.

Another attractive map prepared on the eve of the Revolution was a very large, beautifully-detailed, unpublished map dated 1769, showing old Monmouth, Middlesex and Somerset counties, as well as various proposed boundaries between New Jersey and New York, and many private tracts in northern Jersey. It is unsigned, but may be the work of Ratzer.

The Face of Revolutionary New Jersey

If we were to see now an accurately drawn, complete map of New Jersey at the time of the Revolution, many names would be familiar. All the county names, for example, are still in use. There were thirteen counties in the young state (now there are twenty-one). Sussex County included present-day Sussex and Warren counties. Morris and Salem counties contained the same land they have now. Bergen County included all of present-day Bergen and Hudson counties and all of the present Passaic County northwest of the part of the Passaic River flowing from Little Falls to Paterson.

Essex extended north to Paterson and south to include nearly all of Union County. Hunterdon, Somerset, Middlesex and Burlington counties covered nearly the same ground they do today, except that Mercer County was divided among them, and Burlington had a substantial area now in Ocean County. Monmouth extended south to include nearly all of Ocean County; Gloucester embraced Camden and Atlantic counties besides its own modern territory. Cumberland and Cape May had the same combined area as now, but a different dividing line.

Each county was divided into precincts or townships, totaling ninety-one. Perth Amboy, Burlington and New Brunswick were the only official cities, and Elizabeth (then called Elizabethtown) was a borough. Newark and Trenton were villages within townships of the same name, but Paterson did not exist, and Jersey City and Camden later sprang from villages then known as Paulus Hook and Cooper's Ferry.

No maps of the period show the county lines for the whole state with any reasonable accuracy, or show the townships statewide

at all. Only recently reconstructed maps accomplish this. Many of the villages, towns, and rivers of New Jersey in 1776 do appear on the maps of that period, even if the counties and townships do not. Many names have remained the same: Hackensack, Totowa, Newark, Springfield, Morristown, Chatham, Princeton, Allentown, Mount Holly, Bordentown, Salem and many more. The spelling has varied for some : Raway, Succasunny, Rariton River, Bonumtown, Cranberry, etc. But numerous names cannot be found on a current map: Wheat Sheaf (part of Linden), Somerset Court House (Millstone), Maidenhead (Lawrenceville), Coryell's Ferry (Lambertville), Black Horse (Columbus), Monmouth Court House (Freehold), and many others.

A complete map would show no railroads, canals, turnpikes, or bridges across major rivers. New Jersey's first railroad appeared about 1830, at the same time as the first canals. The first of the series of over a hundred nineteenth century turnpikes was begun in 1801. Important bridges began to appear (over the Passaic and Hackensack rivers) only about 1795.

Revolutionary New Jersey had many dirt roads, ferries, and the navigable rivers themselves to provide transportation. A post road ran from New York to Philadelphia. It followed the route from Paulus Hook to Trenton via Newark, Woodbridge, New Brunswick and Princeton (missing Perth Amboy by three miles), and involved ferries across five rivers, including the Hudson (or "North") and the Delaware. By 1771 the stagecoach trip between New York and Philadelphia required only a day and a half, reduced from the four or five days of thirty years earlier.

Many maps of the period — including the Faden — also show a fairly straight line across New Jersey from southeast to northwest. Called the Lawrence line, it was surveyed in 1743 by John Lawrence of Monmouth County to implement a decision, first made in 1676, dividing the colony into the provinces of East and West Jersey. The division was created after Lord Berkeley, one of the two 1664 recipients of New Jersey sold his half to John Fenwick, a Quaker who, in turn, essentially sold out to four other Quakers, including William Penn. The four met with Sir George Carteret, the owner of the other half, to establish a line dividing the two halves, so that Penn could proceed with his colonizing plans. The provinces were governed from 1676 until 1702 by

separate boards of proprietors, the actual owners of most of the land.

The line agreed upon in 1676 was to run from Little Egg Harbor straight to the presumed northwest corner of New Jersey at the duke's controversial latitude on the Delaware. But it was not surveyed until 1687, when George Keith was hired to run the division line. He was instructed to start from Little Egg Harbor, but to veer west of the 1676 line. He surveyed as far as the South Branch of the Raritan River and stopped. The governor of West Jersey decided that this was unfair and the next year agreed with the governor of East Jersey to a revised continuation of the Keith line, running along the Passaic and Pequannock rivers and thence to the New York line.

Further discussions led to the 1743 survey of the line as originally intended. This Lawrence line applies, however, only to private property tracts. The Keith line determined county boundaries which continue in many cases to this day, completely unaffected by the Lawrence line. East and West Jersey were reunited in 1702 as a crown colony, but each division continued through the Revolution in many practical forms — sociologically and legislatively. Perth Amboy and Burlington, the capitals of East and West Jersey before 1702, remained, by law, alternating capitals of New Jersey until 1790, when Trenton replaced both. Proprietors for East and West Jersey meet even now to resolve certain small private boundary questions.

Mapping During the Revolution

The outbreak of hostilities between the colonists and England presented two mapping problems: the cutoff of British publishers and the need for accurate military surveys. It was twenty years (1795) before an American-made atlas would appear, but the military mapping had to begin almost immediately. Three principal contributions to the mapping of the state of New Jersey directly resulted from the presence of troops. All are sets of military manuscript (hand drawn and unpublished) maps of roads:

1. a series of surveys for George Washington, most by Scottish-born Jerseyan Robert Erskine, the rest by his successor Simeon DeWitt and various assistants
2. a group of field sketches and copies of earlier maps, prepared for the British army by John Hills and others

3. a set of on-the-spot field sketches prepared for the French General Rochambeau by his cartographer Louis-Alexandre Berthier

The greatest contribution — with respect to both accuracy and number of areas involved — was by Erskine.

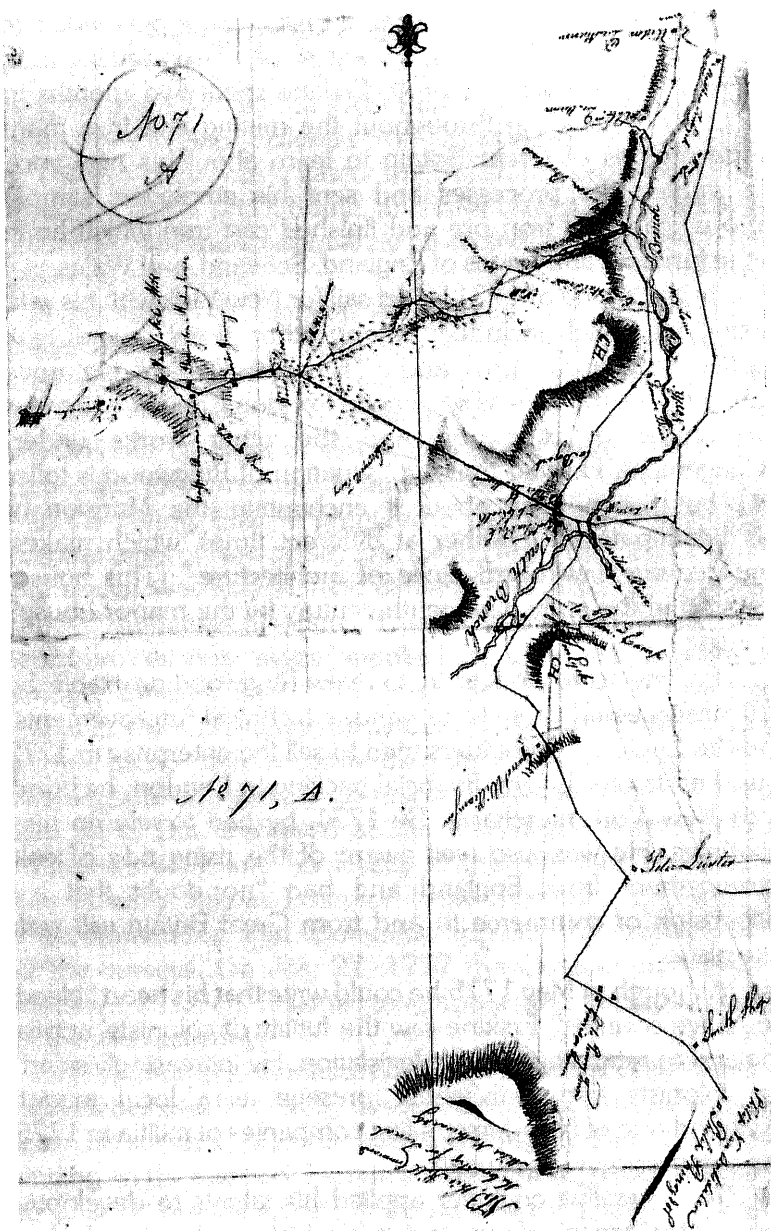
Robert Erskine

Many who have visited Ringwood Manor State Park north of Wanaque Reservoir in Passaic County know the name of Robert Erskine. Lake Erskine is near there. At Ringwood he is memorialized as an ironmaster; this was the reason he came to America.

Born in Dunfermline, Scotland, near Edinburgh, in 1735, Erskine was the son of a Presbyterian minister who died when the youth was seventeen. He is known to have studied at the University of Edinburgh at the age of thirteen and again at seventeen. He first emerged in a recorded business activity in 1759, when he formed a partnership and apparently sold hardware and agricultural implements, with some customers in America. Unfortunately, his partner journeyed to the Carolinas with a considerable portion of the merchandise and then disappeared, leaving Erskine bankrupt and facing the creditors alone. In 1762 he was held by the court to face a suit by twenty creditors; he was released to try to repay them.

Erskine developed his technical skills and devised several inventions. He patented a hand-operated "Continual Stream" water pump which he tried to commercialize, but he had irreparable disagreements with the "Instrument Maker" whom he hired to manufacture the pumps. His "Platometer" was designed to help a navigator determine his position at sea from the sun or the stars. In 1765 (the year he was married), he demonstrated that his "Centrifugal Hydraulic Engine" was much more efficient than a common type then used. With other inventions and hydraulics studies to his credit, he was deemed worthy of a fellowship in the Royal Society of London, to which he was elected in January 1771, only a few months before he departed for America.

His new life was prompted by negotiations beginning in 1769 with some London investors on the verge of bankruptcy. They were victims of the ambitious extensions of their agent Peter Hasenclever, who had been manager of several iron mines in northern New Jersey, such as Ringwood, Long Pond (Greenwood



Map No. 71A, roads near the North Branch of the Raritan River, by Robert Erskine, 1779. An example of his road surveys for Washington. Courtesy The New-York Historical Society.

Lake), and Charlotteburg. Robert Erskine was persuaded to assume the post of manager, vacant since Hasenclever's humiliating return to London in 1769. Erskine spent two months in the fall of 1770 traveling throughout the mining and iron manufacturing regions of Great Britain to learn about his new vocation. He studied the processes and sent his employers samples of various grades of iron ore and finished cast iron which he found in the furnaces and forges of England, Scotland, and Wales.

In the spring of 1771 he set sail for New York with his wife and belongings, which included (among other items) several cases of chemicals, a case of ores, and a "Bag with Books." He arrived in June and in a month was sending to London a detailed report of his impressions of Ringwood and the other works under his management. He said that the "situation of Ringwood is tollerable [sic], but has nothing about it enchanting, the Mansion house has been patched together at different times, which makes it a very acquard [awkward] piece of architecture." (This house was replaced in the early nineteenth century by the manor house now standing.)

Erskine set to work to try to make Ringwood profitable, but he was unsuccessful in spite of various technical improvements. He and the English stockholders tried to sell the enterprise in 1772 but found no takers. Losing financial backing in London, he borrowed from New York merchants. By 1774, he had to rely on his own resources. He was also well aware of the rising tide of colonial estrangement from England and had "no doubt that a total suspension of commerce to and from Great Britain will certainly take place."

Although in May 1775 he could write that his heart "bleeds for my native country," Erskine saw the futility of colonists' appeals to England to retract oppressive legislation. He increasingly sided with the colonists and, with some prestige as a local magistrate, organized one of New Jersey's first companies of militia in 1775. He was commissioned its captain.

The inventive engineer applied his talents to developing an underwater "fence" of iron and steel which would severely damage British ships attempting to travel up the Hudson River. He called it a "Tetrahedron" and sent a model to the proper authorities. A few were installed, providing him with some income. More appealing to

the imagination (although not of his invention) were two huge iron chains which were stretched across the Hudson at Fort Montgomery in 1777 and at West Point a year later to halt British ships on the Hudson. Erskine's iron works provided some of the links. The first chain was a fiasco: the British merely stopped short, removed the chain, sent it home, and later used it at Gibraltar. The second chain was more adequately protected and remained in use until the end of the war.

In January 1777, General Washington, from his Morristown headquarters, had written to Congress expressing the need for accurate maps of the "Country which has hitherto been the Scene of the War." He felt that "Gentlemen of known Character and probity" should be hired to survey and make maps of the roads, rivers, bridges, fords, mountains, and passes.

In the spring, Erskine prepared a detailed map of the north and central parts of New Jersey and lower New York State expressly for the use of Washington, who carried it as a folded pocket map and added numerous notations. The roads, rivers, and towns were copied from existing maps supplied by Lord Stirling (William Alexander), surveyor general for the East Jersey Proprietors, and a general in the Continental army during the war. Since Erskine's map could be no more accurate than the maps he copied from, it was inadequate for military planning. It was also drawn to too small a scale. But it showed ability. Washington was impressed with Erskine's work and his loyalty to the colonists. He first met Erskine in early July at Pompton (now Riverdale), and immediately recommended that Congress appoint the ironmaster to direct the surveys. On July 27, 1777 the Continental Congress commissioned Robert Erskine geographer and surveyor general to the Continental army.

Erskine promptly thanked Washington for the commission in a lengthy letter which carefully described the problems he expected to face in his surveys. He would need a varying number of assistants, depending on the location. Terrain and overgrowth would affect the speed of work, but the surveying would take three times as long as walking over the same route. Direction was to be established with the plane table, "the instrument best adapted for accuracy and dispatch," and distance with metal chains. (Distance was usually reported in units called chains and links. A hundred links made up

one chain, which was sixty-six feet long. Eighty chains equaled a mile.)

Erskine suggested six attendants for each surveyor: two to bear the chain, one to carry "the Instrument," and three to hold flagstaffs. "Young gentlemen of Mathematical genius, who are acquainted with the principles of Geometry, and who have a taste for drawing, would be the most proper assistants for a Geographer." He emphasized the need to consider his surveying work as a part-time activity because of his pressing involvement with the ironworks.

Erskine then proceeded to prepare over a hundred manuscript maps, about one-third involving New Jersey. Many of the maps consist of two to twenty sections on separate sheets. Several other surveyors were involved and duly credited, but Erskine surveyed the overwhelming majority. A few of the other surveyors were local civilians, but most were officers of Pennsylvania regiments. One of the officers, Benjamin Lodge, remains chastized in a scornful comment by Erskine in the corner of one of Lodge's maps showing the road from Newark to Elizabethtown: "This is surveyed by Mr. Lodge A Most abominably Lazy Slovenly Performance not to Survey such a small piece over again or lay it down properly. Witness R.E. F.R.S. " (F.R.S.: Fellow of the Royal Society.)

The wages were of course miniscule by later standards — Erskine received \$4 a day, the assistant surveyors \$2 or \$3 and the chainbearers a half dollar per day. By May 1780, although he had received about \$26,000 to finance the operation, the army still owed him a year's back pay. On the average, he reported, he had one assistant draftsman, three surveyors, and eighteen chain bearers.

In October 1780, Erskine died at Ringwood of a cold and fever. He was forty-five. His widow remarried and, with her husband, retained control of Ringwood until 1783, when it was auctioned off.

Simeon DeWitt

Erskine's successor as geographer and surveyor general was his chief assistant Simeon DeWitt. Born in Ulster County, New York, in 1756, DeWitt enrolled in Queen's College (now Rutgers University) about 1773. The war and the burning of the college

by British troops delayed his studies, but he became the sole graduate of 1776. After serving as a volunteer soldier in the battle of Saratoga, he returned to his home in Ulster County to teach himself more mathematics and surveying. His uncle, later General James Clinton, recommended him to Erskine, and DeWitt was appointed assistant geographer in June 1778.

After Erskine died, Washington recommended DeWitt as the logical replacement, rejecting General Anthony Wayne's suggestion of another assistant, John Watkins. The promotion became effective in December 1780, when DeWitt was not quite twenty-four.

Erskine had carried the numbering of the maps to 114, and DeWitt continued to 131, again with many sheets (A,B,C, etc.) assigned to some of the numbers. His major surveys involved roads from Philadelphia to Yorktown, Virginia.

After the battle of Yorktown in 1781, even though DeWitt had few surveys to prepare, he worked at his post in Philadelphia until 1783. He tried to publish the maps, but Congress was not interested in appropriating funds — other problems were too pressing and money was too scarce. The manuscript maps stayed with the DeWitt family until 1845 when Simeon's son donated the vast majority of them to The New-York Historical Society where they are still held. The entire number of sheets totals about three hundred.

DeWitt resigned his post as geographer in the spring of 1784 to accept appointment as surveyor general of New York State. He remained actively in this post until his death fifty years later, in 1834. In these formative years of New Jersey's giant neighbor to the north, DeWitt was in the midst of boundary disputes with Pennsylvania, transfer of former Indian lands in western New York to returning war veterans, subdivision of the state into many more counties and townships, and preparation of detailed large-scale maps of the state.

The Erskine-DeWitt Maps

The maps prepared under the leadership of Robert Erskine and Simeon DeWitt are the most accurate that we have for New Jersey during the Revolution. They are accurate enough to help us establish fairly clearly which modern-day roads follow the routes surveyed between 1777 and 1781, and there are many.

Most of the maps consist of carefully drawn manuscript sketches of one or two roads, without borders, and generally in script. The scale of these is unmarked but consistently measures one-half mile to the inch. Names are written in the direction most convenient to the draftsman, some completely upside down with respect to the title. The roads are shown as a series of connected straight lines between instrument setups. Householders are identified in rural areas; in towns the names are omitted. Very few county or township boundary lines are shown, but the army hardly needed this information.

Several other Erskine-DeWitt maps were neatly compiled on a smaller scale from a number of field sketches, and were called "contractions." They range in scale from one to eight miles per inch, with scales marked. They help us to identify the locations of some roads which, as shown on the separate maps, have too many obsolete place names, inns, and owners' names to provide clues.

Aside from the dip into southeastern Virginia at Yorktown, the maps show roads with widely varying intensity in an area now bounded by western Connecticut, Schenectady, New York, the Finger Lakes region of New York, and Philadelphia. Erskine favored New Jersey most heavily, undoubtedly because of Washington's intense military activity here.

Most of New Jersey north of a line from Mount Holly to Perth Amboy is well covered by Erskine's maps, especially in the triangle formed by Morristown, Elizabethtown, and New Brunswick. There are no surveys covering what is now Hudson County (although Erskine marked up an earlier property map of this region in 1779). Erskine ignored Sussex County northwest of Newton, and especially the entire southeastern part of the state below the Mount Holly-Perth Amboy line. About a half dozen Jersey maps on the Erskine-DeWitt list are missing, but they do not fill in any of these gaps. One of the most attractive "contractions," Map No. 106A, shows with great care at one mile per inch the area bounded by Morristown, Pluckemin, Somerset Court House, Perth Amboy, and Second River (now Belleville). It should be stressed that only main connecting roads are shown. This is not a "street map." DeWitt also included a grid of latitude and longitude on this map. Number 66 includes all of New Jersey from the latitude of Philadelphia north, but it shows only the roads

surveyed on the other maps, at eight miles to the inch, and rather roughly at that, so it is no replacement for Faden's map.

Washington issued to Erskine and DeWitt several sets of written instructions, still in existence, outlining the routes to be surveyed. Regarding New Jersey, he first asked Erskine in August 1779, "Are the cross roads between the Sussex and Morristown Roads Surveyed?" In December, while at Morristown, he asked him to survey "the Roads in front and rear" of the Morristown encampment accurately and "as speedily as possible." In New Brunswick in August 1781, the general ordered DeWitt "Immediately upon receipt of this" to begin a survey of the road "to Princeton, thence (through Maiden head) to Trenton." How many other instructions are lost, and how much of the choice of the roads was Erskine's, we do not know.

Robert Erskine is not often mentioned in the stories of the Revolution. Only one full-length biography has been written, and that did not appear until 1928. Those who like maps of New Jersey, however, should know that he was at the very forefront of the field during the first years of independence. To inspect the bulk of the maps, one should go to The New-York Historical Society, which has the originals and full size photocopies, or to the Morristown National Historical Park Library, which has photocopies of most of the New Jersey maps.

John Hills and the "Clinton" Maps

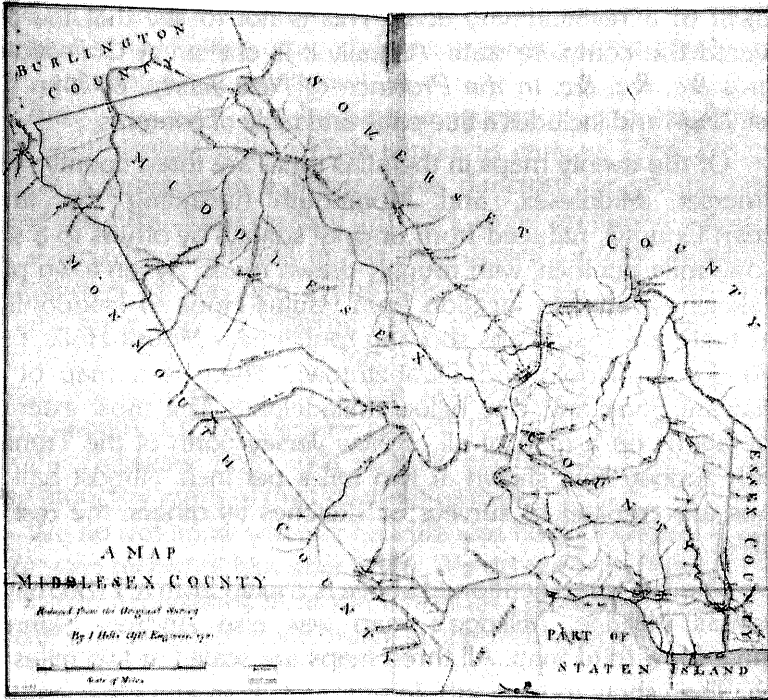
The British army began the revolutionary years with somewhat of a mapping advantage over the colonists, for their army had been expanding its engineering and surveying forces since the French and Indian (or Seven Years) War of 1756-1763. Several local Jersey surveys and maps were available to them — and to the colonists — from the work of private surveyors, but some others were prepared by the army engineers. Nevertheless, when we look through the Jersey maps which made up the collection of the British general Sir Henry Clinton, we find little of the precision which Erskine supplied to Washington. Clinton was the officer who succeeded Sir William Howe as the British commander in 1778 and then began a march across New Jersey to evacuate his men from Philadelphia to New York. On the way, his troops were defeated in the costly battle of Monmouth, a battle which was only a little less

bloody for the rebels.

Clinton's army used over thirty maps covering large and small areas of New Jersey, prepared from new fieldwork or copied from earlier surveys. Two of them are large property maps of Somerset and Middlesex counties, each roughly three by five feet in size. They were copied (with credit) by Lieutenant John Hills from careful surveys of 1766 made by Benjamin Morgan and Azariah Dunham, respectively, prominent civilian surveyors. Dunham actively supported the colonists in various leadership roles during the Revolution. Most other "Clinton maps," as they are called, are unsigned manuscript maps, roughly drawn and showing no evidence of instrument surveys. Some are attributed to John Hills. They are deposited at the William L. Clements Library of the University of Michigan in Ann Arbor. The Alexander Library of Rutgers University and the Morristown National Historical Park Library have photocopies of most of those showing parts of New Jersey.

John Montresor is presumed responsible for a few of the New Jersey "Clinton maps": (1) a map of the main road used by the British in 1776 from near Hackensack to Burlington; (2) a map of much of north Jersey between "the North River and the Delaware" (both maps fairly inaccurate); and (3) maps of the Morristown, north Sussex County, Middlebush and Sandy Hook areas, made in 1777 and 1778. Born in Gibraltar in 1736, Montresor was the son of a military engineer who brought him to America in 1754. His vocation followed his father's: he helped establish New Jersey's northern boundary, and he became "Chief Engineer of America" for the British army in 1775. Three years later, however, he returned to England, having incurred Clinton's displeasure. He retired from the army and died in London in 1799. His colorful journals not only describe mapping techniques but also spell out the frustrations of working under arrogant, anti-technical military leaders. Unlike Erskine, Montresor was involved in many of the battles. His maps were almost a sideline.

John Hills (whose name was often printed "J. Hills") was the outstanding cartographer used by the British army in New Jersey, although our heritage from him is much less than from Erskine. We can be especially grateful for his preparation of a manuscript atlas of New Jersey assembled soon after 1781. No other state was the



"A Survey of Middlesex County," by John Hills, ca. 1785. Map No. 13 of his "A Collection of Plan's &c" Courtesy Geography and Map Division, Library of Congress.

subject of a revolutionary atlas. This is not to say that the atlas covered the complete state. Actually it is entitled *A Collection of Plan's &c. &c. &c. in the Province of New Jersey, by John Hills Asst. Engr.* and includes a title page and table of contents.

Of the twenty maps in the atlas there are three county maps: Somerset, Middlesex, and Monmouth (including the future Ocean County), reduced from original surveys by others to a scale of one mile per inch, with roughly drawn roads. Seven town plans or sketches range in location from Paulus Hook to Haddonfield, and there are road maps showing routes near Mount Holly, Freehold, Paulus Hook, and Elizabethtown. There is a map of the Delaware River and Bay below Philadelphia. The most extensive coverage is on a map of all of New Jersey north of the Trenton-Perth Amboy line, shown at two miles per inch. Almost half the maps are credited to surveys or sketches by others; the rest are Hills's.

The last map mentioned above is copied from a 1780 map by Thomas Millidge. Millidge's map was also Andrew Skinner's source for a third map. All three maps are scaled at two miles per inch. They show more north Jersey roads than any other maps of the period, including Erskine's, but with much less accuracy than his. Hills, on his copy, accidentally marked Princeton as "Kingstown," and confused "Raway" with one of its neighboring towns.

Like Erskine, Hills neglected most of south Jersey, except for the Delaware River region as far south as Philadelphia, which both included, and old Monmouth County, which Erskine touched at Allentown and Hills showed in full.

Hills's atlas was made for Clinton, but it was bought by the Library of Congress at an auction in 1882. It can still be seen there, but the Alexander Library at Rutgers and the Morristown National Historical Park Library have full-size photocopies of nearly all the maps.

Much less is known about John Hills than about Erskine. He first appears in existing records on a 1778 list of extra draftsmen of a British regiment in New York City. He was arrested in early 1779 for failure to conform to army discipline and was required to express appropriate contrition. In 1780 another complaint was lodged. When he was about to be transferred to the artillery in late 1779, he resigned his artillery commission but was allowed to

continue as engineer. From 1781 to 1784, he was a second lieutenant in the British army and was preparing some fifty known maps, including those mentioned.

After the war, he became a surveyor and draftsman, advertising his services in a Philadelphia as early as 1786. He was listed as a surveyor in a Philadelphia directory for several years around the turn of the century. In 1784, while preparing a map of New Jersey, he advertised in the *New-Jersey Gazette* to request that travelers call on him at the Princeton post office to "point out any error that he may be liable to make in his map." Apparently he never completed this map, but in 1796 he issued an outstanding large-scale map of the eastern counties from Bergen to Monmouth. Of the western part of the state this map shows only the Delaware River with its mills and ferries. Later he prepared attractive maps of the Philadelphia area.

We do not know when John Hills was born or when he died. There is no record of him after 1816. We do not know how he was able to win acceptance from the victorious colonists in view of his pro-British activities. It should make an interesting story.

Louis-Alexandre Berthier

The third set of military road maps of New Jersey, only six in number, was prepared by a young French officer on the staff of the commander of the French army in America, the Comte de Rochambeau. Born in 1753, Louis-Alexandre Berthier grew up with the French army engineering corps, in which his father was a leading topographical engineer. In 1770, at seventeen, Louis-Alexandre was a lieutenant; in 1780 he joined Rochambeau's army, which soon landed at Newport, Rhode Island, where it remained inactive for nearly a year. By late June 1781, when the army began its march to join Washington's forces, Berthier had become a part of the general's staff.

The two armies met and camped together for six weeks near Tarrytown, New York, while the generals planned strategies. One possible offensive was to attack Clinton's army at New York. The alternate plan, which was adopted for various reasons, was to march both the American and the French armies to Virginia by different routes to attack General Charles Cornwallis's army. As outlined by Washington, the route through New Jersey for the

French would go from Suffern, New York, to Trenton via Whippany, Morristown, Somerset Court House, and Princeton. The American army would march by way of Paramus, Springfield, Bound Brook, and Princeton. The timetable, also defined by Washington, was achieved with only a slight delay; the French army passed through New Jersey in late August and early September of 1781.

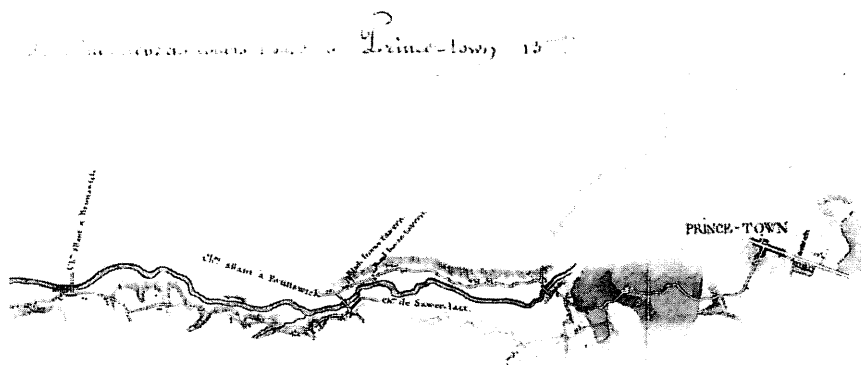
Working with rough field sketches, Berthier prepared the road maps for the French march, starting from Providence, Rhode Island. Each map represents a day's march of about fifteen miles. In New Jersey, this resulted in six maps for the road from Suffern to Trenton. The maps are very attractive. Watercolors help to distinguish the features; towns and landmarks are neatly identified with French printing. Hills are shaded.

In contrast with Erskine's instrument-surveyed maps, the field-sketch origin of these maps is evident from their limited accuracy. The maps display no directional arrow. This is just as well, since the accuracy is such that the direction of north varies considerably on different parts of each map. Although the towns through which Rochambeau traveled are usually clear enough, determining his actual route is often difficult and occasionally almost impossible. Berthier's scale of about two miles to the inch is only about a fourth of Erskine's scale.

In addition to the road maps, Berthier prepared a local map of the campsite at each of the overnight stops on the route. He also wrote an itinerary describing the route in detail. The itinerary has recently been translated into English and beautifully published, with all these maps shown in color.

Rochambeau's army proceeded to Yorktown and cooperated with Washington's troops in defeating the British under Cornwallis in October 1781. The French army spent the winter in Virginia, returning northward the next summer and fall. Approximately the same route was followed in reverse. No new road maps were drawn, but several new campsite maps were prepared due to the rearrangement of the camp at some stops.

The existing originals cover the route from Providence only as far as Maryland. Campsite maps show locations from Boston to Yorktown, and there are maps showing three fords, one crossing the Delaware River at Trenton. A set of the maps in Berthier's



"From Somerset Courthouse to Prince-town 13 Miles," by Louis-Alexandre Berthier, 1781. Courtesy Princeton University Library.

personal papers can be seen at the Princeton University Library, which acquired them in the 1930s. The Library of Congress has purchased another, less complete set held by the Rochambeau family.

Berthier returned to France in 1783. Ten years later, he joined Napoleon as his chief of staff. As Napoleon rose, Berthier rose — finally to the rank of a prince in 1809. He lost favor with the tyrant when he disagreed with Napoleon's plan to march on Moscow. By the time the monarchy resumed power in 1814, Berthier was supporting the king. When Napoleon briefly returned to power in 1815, Berthier left France and leaped to his death after watching Russian troops march through Bavaria to attack France shortly before Napoleon's final defeat at Waterloo.

Other Revolutionary Maps of New Jersey

While we have highlighted the most outstanding collections of New Jersey maps of the Revolution, there are many other maps of interest, especially to those who study military strategy. This discussion would be incomplete without mentioning some of them.

John André is one of those few map makers whose name is generally known to the American history student. As in most other cases, he is known for something having little to do with map making. In his case, fame unfortunately results from his execution by the American army as a British spy assisting in Benedict Arnold's betrayal. Born in London in 1751, he rebounded from an unhappy love affair into a British army commission in 1771. By 1779 he had become Clinton's adjutant general. A skilled executive, writer, and technical artist, he left various journals and maps when he was hanged in 1780 (on the same day, incidentally, that Robert Erskine died). Over a dozen of his New Jersey maps are held by the Huntington Library in San Marino, California. A few others are held at the Clements Library, Ann Arbor, Michigan. They concentrate on the region between Philadelphia and Sandy Hook, and on the present areas of Somerset, Union, Middlesex and Bergen counties.

Battle maps made at the time of the Revolution include several of the battle of Monmouth made by a French officer, Michel Capitaine du Chesnoy, and by a British officer, George Spencer. The Morristown encampment is shown by the French Captain Etienne de Rochefontaine and the American General Henry Knox.

Town layouts, roads, regional maps, and military forts and attacks are shown on several dozen maps and sketches. Many of them are anonymous, but others are signed, or the map maker has been identified from the style or other clues. New Jersey's corridor from Paulus Hook to Trenton is of course most heavily favored. Frequently these maps betray their makers' viewpoints. As an example of perspective, one of George Spencer's presumed maps is entitled "Surprize of the Rebels at Hancock's House"; American writers usually look at this Salem County attack not as a "surprise" but as a massacre of sleeping soldiers and civilians. The only known casualties, however, were two Loyalists killed by their own side. American Captain Bernard Romans prepared a "Chorographical Map of the Country round Philadelphia" which includes most of New Jersey. He identifies counties, but the boundaries are very crude, and Somerset County is erroneously squeezed out altogether by its neighbors.

We have only sampled the battle maps here. Nearly all are carefully listed in two comprehensive books by Peter J. Guthorn described at the end of this essay.

Mapping Immediately After the Revolution

The new American states — with independence officially acknowledged by the treaty of 1783 — were faced with two principal mapping needs: reliance on American instead of British map makers, and improvement in topographic and road maps to facilitate travel and settlement.

In 1789 Christopher Colles prepared the first published set of road maps in the United States, *A Survey of the Roads of the United States of America*. Born in Ireland in 1739, he brought his family to America in 1771. He tried lecturing, designing, and surveying. He designed a public water system for New York City; it was well under way when construction was halted by the war in 1776. Throughout the war he and his family wandered about the mid-Atlantic area looking for employment. In 1783, while living in Morristown, Colles wrote to Washington suggesting that he be hired to improve the navigability of the Ohio River by removing some of the rapids. Washington replied that the idea was excellent but premature. He suggested that Colles work on projects of "more immediate public utility."

Two canal proposals submitted to New York State and president Thomas Jefferson, respectively, also failed to get approval or financial support. The second involved a canal crossing New Jersey above ground from Raritan Bay to Burlington. Colles died discouraged and almost penniless in 1816.

His book of road maps was no more successful financially. Originally intended to consist of one hundred pages, the book included only eighty-three. It covers the main route — sometimes showing two alternate branches — between Albany, New York, and Yorktown, Virginia, swinging east to Stratford, Connecticut. Just twelve maps are devoted to New Jersey, depicting two roads from Paulus Hook to Philadelphia, one via Trenton and an alternate via Mount Holly. The maps are arranged in a strip chart format introduced over a hundred years earlier in England.

Colles presumably did some of his own surveying, but it is apparent that he used several of the Erskine-DeWitt maps. The route is not only identical in many cases, but the names are too similar to be coincidental. Of his twelve New Jersey maps, only one does not follow an "Erskine" route.

Colles's entire book was recently reprinted. Dated so soon after the Revolution, it makes an enjoyable companion for reliving the past. The towns, intersections, churches, households, inns, and terrain are well identified as one proceeds from mile marker to mile marker along the book's roads.

Although Colles's *Survey* was commercially unsuccessful, only a little more than a decade elapsed before the first book appeared which could truly be called an American-made atlas. In 1795 a moderate-sized map of New Jersey appeared in a book of maps accompanying Mathew Carey's *American Edition of Guthrie's Geography improved*. This map, compiled by Samuel Lewis, was perhaps a little more accurate than Faden's map. It nevertheless shows county lines and roads with much the same sort of sweeping approximation which kept the user unable to depend fully on any of the maps of the complete state published up to that date.

It was almost a century before the mapping of New Jersey came to its happy climax and gave us the precise maps now available. The formation of the New Jersey Geological Survey was the turning point. Trying to locate natural resources with existing

maps was frustrating. The state hired George H. Cook, a Rutgers professor, as state geologist in 1864. He eventually realized that what was needed was a complete topographic survey, including triangulation, elevations, and permanent survey markers. A highly persuasive and energetic scientist, he convinced the legislature and received full cooperation from the new U.S. Geological Survey and from the U.S. Coast and Geodetic Survey.

A twenty-one-year-old civil engineer, C. C. Vermeule, was hired to conduct the surveys in 1879. Nine years and \$55,000 later, the entire state was completed, and New Jersey became the first in the nation to be completely and accurately mapped. The state and federal governments began to issue various "topographic" maps based on this work, updating them every few years.

Commercial road maps and atlases are almost entirely constructed from government-prepared maps. The commercial map companies do almost no surveying themselves, although some make field checks to try to correct minor errors which will probably continue to plague the map-making field as long as human beings are involved. New Jersey map making has finally reached the high level which the field engineers of the revolutionary era wished for but could only partially achieve with the most strenuous activity.

For Further Reading

An excellent collection of important early maps of the Americas and of some of the early colonies on the eastern seacoast is found in *A Book of Old Maps Delineating American History from the Earliest Days Down to the Close of the Revolutionary War*, by Emerson D. Fite and Archibald Freeman (Cambridge, Mass.: Harvard University Press, 1926; reprinted 1969 by Dover Publications, New York). While giving little space to New Jersey, this classic has seventy-five large reproductions of important early maps, which increasingly focus on the future United States from the fifteenth century to the Revolution. Each is described in detail. A shorter book, *Early Maps of North America*, by Robert M. Lunny (Newark: New Jersey Historical Society, 1961), has a more satisfying emphasis on New Jersey and contains more narrative. The twenty-six map reproductions are of the highest quality.

Some of the problems of early map makers in America are included in the vivid description of the landforms found in T. Pownall's *A Topographical Description of the Dominions of the United States of America* (Pittsburgh: University of Pittsburgh Press, 1949). Edited by Lois Mulkearn from a 1784 manuscript, it includes earlier journals by Lewis Evans and others. A more general world history of map making was enjoyably written by Lloyd A. Brown and published in 1949 by Little, Brown & Co. (Boston) as *The Story of Maps*. It was reprinted by Bonanza Books (New York), in 1969.

The development of the revolutionary road system of New Jersey may be better understood by reading the well-researched classic by Wheaton J. Lane, *From Indian Trail to Iron Horse: Travel and Transportation in New Jersey, 1620-1860* (Princeton: Princeton University Press, 1939). Large-scale reproductions of four different mapping projects, each in several sections, are presented in *New Jersey Road Maps of the 18th Century*, edited by Howard C. Rice, Jr. and published by the Princeton University Library in 1964. The six-map series by Berthier showing the route of the French army across New Jersey in 1781 is included. More recently Dr. Rice and Anne S. K. Brown have edited and translated various journals and itineraries relating to *The American Campaigns of Rochambeau's Army 1780, 1781, 1782, 1783*. This beautiful two-volume set was jointly published by Princeton University Press and Brown University Press (Providence, R.I.) in 1972, and it includes color reproductions of all of Berthier's maps. Volume II is of special interest concerning New Jersey.

The only detailed biography of Robert Erskine was originally published in 1928 by the author and republished in 1966 by Rutgers University Press (New Brunswick). It is Albert H. Heusser's *George Washington's Map Maker, A Biography of Robert Erskine*, edited by Hubert G. Schmidt. This homey, hero-worshipping volume, well documented in spite of its occasional excesses, makes fascinating reading. A more scholarly biography of Christopher Colles, including a reprint of his entire road atlas, the first in the United States, was issued by Belknap Press of Harvard University Press (Cambridge, Mass.) in 1961. Under Colles's name as author, it is entitled *A Survey of the Roads of the United States of*

America, 1789. As was his road atlas, it is edited by Walter W. Ristow of the Library of Congress, who carefully discusses the relationship of his maps to those of Erskine.

Extensive annotated listings of maps of the revolutionary period are contained in two books by Peter J. Guthorn, M.D., a Monmouth County surgeon. Published by Philip Freneau Press, Monmouth Beach, they are entitled *American Maps and Map Makers of the Revolution* (1966) and *British Maps of the American Revolution* (1972). The lists are based on searches of numerous libraries throughout the United States and England, and the books include several map reproductions and brief biographies of 171 American and British cartographers. New Jersey and the Erskine-DeWitt maps are well covered.

The evolution of mapping and civil boundaries throughout New Jersey's history is presented in two books by John P. Snyder. *The Mapping of New Jersey: The Men and the Art*, published by Rutgers University Press (New Brunswick, 1973), is written in narrative form and includes numerous illustrations, evaluations of contemporary maps, and short biographies of leading map makers. *The Story of New Jersey's Civil Boundaries, 1606-1968*, published by the Bureau of Geology and Topography (Trenton, 1969), is a definitive documentary showing in outline or detail the changes in boundaries of each county and municipality. One can thus determine the extent of all the townships as they existed during the Revolution, or at other times.

Papers and comments given by three of the above writers were presented in a symposium sponsored by the New Jersey Historical Commission in December 1972. They are published in a book edited by William C. Wright and entitled *New Jersey in the American Revolution II*, published by the Commission (Trenton, 1973). Dr. Guthorn spoke on "The Role of New Jersey in British Strategy As Demonstrated by Maps," and Dr. Rice discussed "Rochambeau's Army in New Jersey: the Cartographic Record." Snyder provided comments.

Some of the above books will probably be found in local libraries. For those readers whose appetites are whetted to go further, a listing of the principal collections of New Jersey maps of the revolutionary period will be helpful. Most useful are the Special Collections of the Archibald Alexander Library of Rutgers

University, College Ave. near Huntington St., New Brunswick. Farther north in New Jersey, the Joint Free Public Library of Morristown and Morris Township (Miller Rd. at South St., Morristown) and the Museum Library of the Morristown National Historical Park, behind the Ford Mansion (Morris Ave. at Washington Ave., Morristown) are recommended.

The New Jersey Historical Society, 230 Broadway, Newark, and The New-York Historical Society, 170 Central Park West at 77th St., New York City, have valuable deposits, including especially the original Erskine-DeWitt maps at the latter. The outstanding Library Map Room and Rare Books Division of Princeton University's Firestone Library (Washington Rd. at William St., Princeton) have Berthier's and other pertinent maps.

There are smaller collections at several other libraries in New Jersey, but trips out of state and beyond New York will lead to New Jersey maps unavailable elsewhere. Foremost is the Geography and Map Division of the Library of Congress at 845 S. Pickett St., Alexandria, Virginia. Leaders among the many others are the William L. Clements Library of the University of Michigan (Ann Arbor, Michigan) and the Henry E. Huntington Library and Art Gallery in San Marino, California.

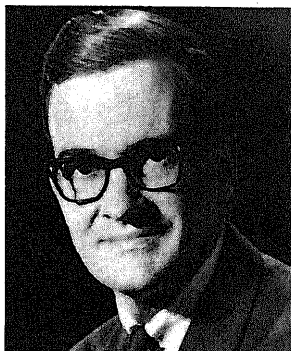
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John P. Snyder has had a lifelong affection for maps and the men who make them. Holder of degrees in chemical engineering from Massachusetts Institute of Technology and Purdue University, Snyder is employed as senior project engineer by CIBA-GEIGY Corp., Summit, New Jersey. He is author of *The Story of New Jersey's Civil Boundaries, 1606-1968* (1969), which received an award of merit from the American Association for State and Local History, and *The Mapping of New Jersey: The Men and the Art* (1973).



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