

# **Famous Surveyors--Footsteps to Follow**

*by Walter G. Robillard and Kimberly A. Buchheit*

First Edition, December 16, 2010

Published as Course Reference Materials and Recommended Reading  
for the "Premier" presentation of this Workshop/Seminar

NJSLPS SurvCon 2011

Friday, February 4, 2011, 8 AM - 12 PM

Bally's Park Place Hotel and Casino, Atlantic City, New Jersey

## **Introduction/Brief Course Description:**

### **Famous Surveyors--Footsteps to Follow**

*Presented by Walter G. Robillard with Kimberly A. Buchheit*

This presentation will bring insight to the ancient and honorable practice of Land Surveying through the adventurous lives and work of several historic figures. The likes of John Love and Andrew Ellicott set a standard for integrity and built a foundation of pride for our deep rooted traditions.

It is well known that George Washington, Abraham Lincoln and Thomas Jefferson are immortalized on Mt. Rushmore for their great contributions to our nation. It is not as well known that at least six (6) out of fifty-six (56) of the signers of the Declaration were Surveyors, including Thomas Jefferson, its chief author and New Jersey's own Abraham Clark.

Teams such as Charles Mason & Jeremiah Dixon and Meriwether Lewis & William Clark relied on their surveying expertise to conduct work that was integral to the development of the United States of America. These significant figures are referenced in nearly every American History text. Another fine example is Henry David Thoreau, a man of many talents, including surveying. Not only did he live and write of the virtues of "Walden Pond", he surveyed it.

This course will salute and honor our famous predecessors, remind us of the beauty of our traditions and provoke thought about our personal legacies.

# **Famous Surveyors--Footsteps to Follow**

*by Walter G. Robillard and Kimberly A. Buchheit*

First Edition, December 16, 2010

Published as Course Reference Materials and Recommended Reading  
for the "Premier" presentation of this Workshop/Seminar

NJSLPS SurvCon 2011

Friday, February 4, 2011, 8 AM - 12 PM

Bally's Park Place Hotel and Casino, Atlantic City, New Jersey

## **Presenters Notes:**

These materials are being made available to attendees of the workshops being presented at the NJSPLS SurvCon 2011. They are not to be reproduced except for the personal use of the attendees of the workshops.

The presenters of this workshop hope that you will take a few moments to review these materials in advance of the "live, in-person" interpretation of "**Famous Surveyors-Footsteps to Follow**".

If you care to print and read, you will have an opportunity to become familiar with the basic biographies of the Famous Surveyors that we plan to discuss in greater detail during the "live" presentation.

If you wish to "*Go Completely Green*", you can avoid printing and you can also access numerous hyperlinks to source materials within this (.pdf) document. These materials are designed to direct curious participants to additional resources and endless hours of modern-day "surfing" and discovery, if greater depth of knowledge on any of the topics is desired before or after the presentation.

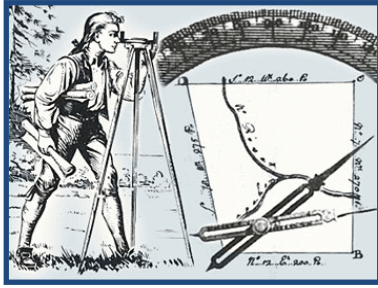
We do not intend to take any credit for the material that has been compiled from others sources. There are numerous resources available, far too many to reference and far too many to summarize here. We call your attention to these resources for educational purposes and for your own personal enlightenment. Each source has been cited with credit and/or a direct link is provided. Please feel free to support the authors, researchers, organizations and websites which you become aware of or visit in your virtual travels through these materials.

In most cases, this information has been compiled from public sources, public domain, or from materials that are "out of copyright". In some cases, we have been able to obtain permission to reprint copyrighted materials and we have acknowledged those specific cases, where applicable.

Since this is an experiment into the next generation of possibilities for handouts and recommended reading...your comments are invited. Ah...technology!

We look forward to seeing you in February and we will share many more tidbits of information with you during the "live" presentation session.

Thank you-  
Walt Robillard and Kim Buchheit



## John Love (Active from 1688-1711)

Little is known about John Love, the author of *GEODAESIA*. We may need to know him through his writing and his mapping work. *GEODAESIA* is commonly reported as the first surveying reference book written and produced for the Colonial American surveyor.

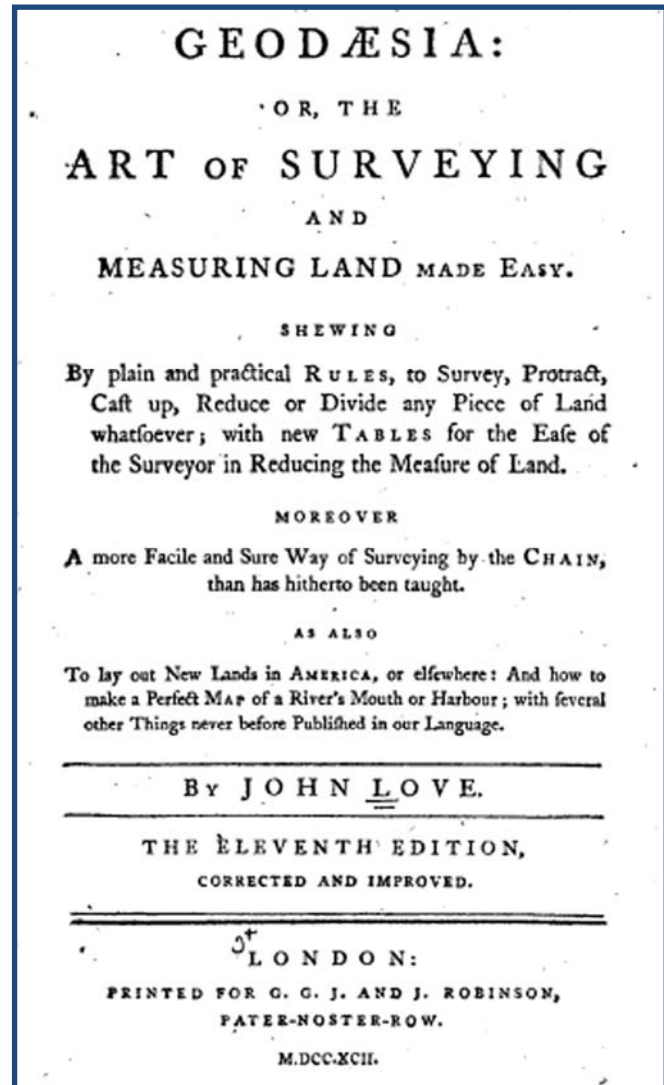
John Love was born in England, probably around 1660. He became a land surveyor at an early age and called himself, "Philomathematicus". Prior to 1688, perhaps around 1680, he traveled to the New World and started surveying grants for settlers mainly in the Carolinas and on the Caribbean Island of Jamaica. He was accompanied by his friend and fellow surveyor, Maurice Matthews. Together the two surveyors produced one of the early maps of The Carolinas.

Love was particularly concerned about the lack of knowledge exhibited by surveyors in the Carolinas. Therefore, Love was motivated to write one of the first practical guides for the field surveyor, *GEODAESIA, or the Art of Surveying and Measuring of Land Made Easie*.

His first edition, published in 1687 in England was in all probability included in many surveyors' packs when they departed for America. The book was so successful that it went into 11 editions in London, before it was republished in 1793 in America. The 12<sup>th</sup> edition was published in New York by Samuel Campbell. Research indicates that this was the first survey book to be published in the newly formed United States of America. A later 13<sup>th</sup> edition was published in 1796 in New York. George Washington (1732-1799) and other notable Colonial surveyors studied surveying from Love's *GEODAESIA*, which became widely used in America.

Love's *GEODAESIA* changed little over the years, even considering the later revisions of Samuel Clark. Instructions are given in use of a Gunter chain and measuring angles with the circumferentor, plane table, and semicircle. There are also directions for taking field notes and measuring and calculating the acreage for plots of land.

In his popular historical text, *English Land Measuring to 1800*, A.W. Richeson pointed out that: "*GEODAESIA* is significant in that it is a clear exposition of the description of instruments and methods of surveying and Love is the first English writer to consider the surveying of land in America where the conditions under which the field work was conducted differed from those in England."



## Recommended Reading:

[GEODAESIA \(Google Books\)](#)

Preface, Chapter 1, Chapter 2 (The Point, the Line, etc.) and Chapter 5.

## See John Love's Work

A compleat description of the province of Carolina in 3 parts : 1st, the improved part from the surveys of Maurice Mathews & Mr. John Love : 2ly, the west part by Capt. Tho. Nairn : 3ly, a chart of the coast from Virginia to Cape Florida / published by Edw. Crisp ; engraved by John Harris. (1711?)

[http://memory.loc.gov/cgi-bin/query/r?ammem/gmd:@field\(NUMBER+@bandg3870+ct001123\)](http://memory.loc.gov/cgi-bin/query/r?ammem/gmd:@field(NUMBER+@bandg3870+ct001123))

The map of Carolina in 3 Parts is also referenced in this article:

<http://walledcitytaskforce.org/2008/04/17/crisp-map/>



## For the Intellectually Curious:

Love learned from Leybourn...Published 1653, Subsequent Editions (Cunn 1722).

[THE COMPLEAT SURVEYOR \(Google Books\)](#)

**Leybourn, William**, *The Compleat Surveyor: Containing The whole Art of Surveying of Land, by the Plain Table, Theodolite, Circumferentor, and Peractor*. (London, 1653), 279 pages with numerous illustrations and diagrams throughout. This was a major work of the period and was reprinted numerous times with the 5th edition of 1722 being substantially expanded upon by Samuel Cunn. The Cunn version included a number of fancied surveying illustrations of which some have been reprinted in recent times and at times incorrectly credited to the 1653 edition. Each edition of the book was larger in content and substance and brought the work to a standard that exceeded most others of the time.

In Virginia, there was no formal course of study to become a surveyor. Young men could read such books as John Gibson's *Treatise on Surveying* or John Love's *GEODESIA*, but hands-on practice was essential.

[John Gibson's Treatise on Surveying-Marcus Trotter, 1839 Edition \(Google Books\)](#)

Some materials in this section were sourced from:

[http://www.surveyhistory.org/surveying\\_books\\_1600s\\_-\\_1700s.htm](http://www.surveyhistory.org/surveying_books_1600s_-_1700s.htm)

<http://www.lva.virginia.gov/exhibits/fry-jefferson/surveyors.asp>



## George Washington (1732-1799)

“Associate with men of good quality if you esteem your own reputation; for it is better to be alone than in bad company.”

“If the freedom of speech is taken away then dumb and silent we may be led, like sheep to the slaughter.”

-George Washington



George Washington, 1732-99, 1st president of the U.S., commander in chief of the Continental Army in the American Revolution, was born in February 22, 1732 in Westmoreland County, Virginia into a wealthy family. He became a surveyor as a young man and was one of the principals of the Ohio Company whose purpose was the exploration of Western lands.

### George Washington: Surveyor and Mapmaker

By Edward Redmond, Senior Reference Librarian  
Geography and Map Division  
Library of Congress  
Washington, DC

Acknowledgement Library of Congress: <http://memory.loc.gov/ammem/gwhtml/gwhome.html>

Online resource with maps, links and annotations: <http://memory.loc.gov/ammem/gmdhtml/gwmaps.html>

### Tracing the Maps in George Washington's Life

"The want of accurate Maps of the Country which has hitherto been the Scene of War, has been a great disadvantage to me. I have in vain endeavored to procure them and have been obliged to make shift, with such sketches as I could trace from my own Observations . . . ."

Most Americans are familiar with George Washington's role as the leader of the Continental army against the British forces in the American Revolution or as the first president of the United States, but many may be unaware of Washington's lifelong association with geography and cartography. Beginning with his early career as a surveyor and throughout his life as a soldier, planter, businessman, land speculator, farmer, military officer, and president, Washington relied on and benefited from his knowledge of maps. Between 1747 and 1799 Washington surveyed over two hundred tracts of land and held title to more than sixty-five thousand acres in thirty-seven different locations. Early in the Revolutionary War, even with the responsibility of leading the army on his shoulders, Washington sometimes found it necessary to make his own field sketches, as the quotation above suggests. Recognizing a need, Washington appointed Robert Erskine as the first geographer to the Continental army in 1777.

Since his death in 1799 more than a thousand biographies have been published exploring various aspects of George Washington's life. Most nineteenth-century works give little attention to Washington's early years, when he worked as a surveyor. The majority of twentieth-century biographies do discuss Washington's surveying and land acquisition, however, and in recent years a number of works have been specifically devoted to the subject.

*The George Washington Atlas*, initially published in 1932 by the George Washington Bicentennial Committee, was the first attempt to compile a bibliography of maps drawn or annotated by George Washington. The atlas was conceived as part of the nationwide observance of the two hundredth anniversary of Washington's birth and identified 110 extant maps or surveys drawn or annotated by Washington. The editor, Colonel Lawrence Martin, chief of the Geography and Map Division, Library of Congress, attempted to list all known Washington maps and brought more than twenty new items to light. These range from Washington's first survey exercise in 1747 to his last survey of the Mount Vernon lands and include pencil sketches, pen and ink drawings, roughly drawn field surveys, and finished survey plats. Recent research has uncovered additional items not included in the 1932 inventory.

Washington's cartographic career can be divided into two phases: public surveyor and private land speculator. Undoubtedly, the close association with and practical knowledge of the land that Washington gained as both a surveyor and land speculator contributed to his development from surveying apprentice to one of the leaders of Virginia, and later, of the United States.

### **Washington As Public Land Surveyor: Boyhood and Beginnings**

George Washington was born February 22, 1732, to Augustine and Mary Ball Washington at Popes Creek Plantation in Westmoreland County, Virginia. When his father died in 1743, eleven-year-old George inherited the small Ferry Farm on the Rappahannock River where he was then living with his mother and siblings, while his older half brother Lawrence Washington inherited the larger farm at the junction of the Little Hunting Creek and Potomac Rivers that he renamed Mount Vernon. As he grew to maturity, young George had little use for the meager prospects at the Ferry Farm plantation. After flirting briefly with the idea of a career in the Royal Navy, he began studying geometry and surveying, using a set of surveyor's instruments from the storehouse at Ferry Farm.

Among the earliest maps attributed to Washington are sample surveys included in Washington's so-called "School Boy Copy Books," housed in the George Washington Papers in the Manuscript Division of the Library of Congress. The schoolbook includes lessons in geometry and several practice land surveys Washington prepared at the age of sixteen. These include a survey of the turnip garden belonging to Lawrence Washington, on whose Mount Vernon estate he had been spending increasing amounts of time. Early in 1748, with as few as three practice surveys under his belt, George Washington accompanied George William Fairfax and James Genn, Surveyor of Prince William County, on a month-long trip west across the Blue Ridge Mountains to survey land for Thomas, Lord Fairfax, 6<sup>th</sup> Baron Cameron. Although the surveys were actually performed by the more experienced members of the party, the trip was Washington's formal initiation into the field and led him to pursue surveying as a profession. The trip also marked the beginning of a lifelong relationship between Washington and the powerful and influential Fairfax family that gave the young surveyor access to the upper echelons of Virginia society.

### **Washington As Public Land Surveyor: The Fairfax Connection**

In the Northern Neck of Virginia, the extensive region between the Rappahannock and Potomac Rivers, land matters were governed by the Proprietor, Lord Fairfax, and his Virginia representative and first cousin, William Fairfax, through the Northern Neck Proprietary Office. In 1649 King Charles II of England had deeded five million acres lying between the rivers to a group of loyal supporters, including the Fairfax family. Through death and marriage the land was consolidated under one man, Thomas, Lord Fairfax, who established his seat at Belvoir, approximately four miles upstream from Mount Vernon. Later, he moved west of the Blue Ridge Mountains to Greenway Court in Frederick (now Clarke) County, Virginia.

Prospective settlers in the Northern Neck were required to obtain a survey warrant from the Northern Neck Proprietary Office for a set amount of acreage in a specific location. The survey

warrant, issued directly from the Northern Neck Land Office to the county surveyor, instructed the surveyor to make a "just and true" survey of the land, thereby officially determining and limiting its boundaries. Because they were responsible for laying out the land claims, surveyors had a unique role in Virginia society. Their appointments guaranteed a certain social prominence, since nearly all parties interested in gaining title to an area of land were required to deal with the surveyor. Surveyors were also among the best-educated Virginians and were often in the best position to purchase land for themselves. It was not unusual for surveyors to acquire large estates from the many opportunities they had to patent land in their own names. Additionally, their intimate knowledge of the land and official capacity as representatives of large land holders such as the Fairfaxes made their participation politically and practically essential to large land companies such as the Loyal Land Company of Virginia, the Ohio Company, and the Mississippi Land Company.

In July 1749, at seventeen years of age and largely through the Fairfax influence that he had cultivated, Washington secured an appointment as county surveyor for the newly created frontier county of Culpeper, where he served until November 1750. He then continued to work in the Northern Neck with the permission of the Fairfax family from November 1750 to November 1752. During his three years on the frontier he established a reputation for fairness, honesty, and dependability, while earning a very decent living. Philander Chase, the current editor of the Washington Papers at the University of Virginia, writes that frontier surveyors "could earn an annual cash income that was exceeded only by the colony's finest trial lawyers." From the records documenting the 199 professional surveys attributed to Washington it is clear that he did not confine himself to Culpeper County, even while he served as its official surveyor. Rather, Washington did the majority of his surveying in Frederick and Hampshire Counties, the westernmost counties of the Northern Neck. Partly because of his close relationship with the Fairfax family, he may have had a distinct advantage over other Northern Neck surveyors.

### **Washington As Public Land Surveyor: Culpeper, the Frontier, and Alexandria**

Of the 199 surveys credited to Washington, fewer than seventy-five are extant today. All display a finished, stylized, and symmetrical appearance. The Geography and Map Division of the Library of Congress has several examples of Washington surveys, including a November 17, 1750, survey plat for John Lindsey of 460 acres along the Great Cacapon River, on which Washington used the initials "S.C.C.," Surveyor of Culpeper County, to denote his official role. This is one of the last survey plats Washington prepared in his capacity as county surveyor.

In addition to the public surveys he made on the western frontiers of the Northern Neck, Washington prepared two remarkable maps of the area that became the city of Alexandria, Virginia, on the Potomac River. The earliest is the *Plat of the Land whereon now Stands the Town of Alexandria*, drawn in 1748. As the title suggests, this map is a simple outline of the future town, with the land area annotated as "Area 51 acres, 3 Roods, 31 Perch." The site map shows the location of existing structures such as a tobacco-inspection warehouse and includes notes on the land within the proposed town limits indicating its suitability for use. The map also provides soundings and shoal locations in the river, information vital to the operation of any port city. The absence of a street grid suggests that the map may have been drawn sometime between March 1748 and July 1749, when the town of Alexandria was formally incorporated.

The second map, entitled *Plan of Alexandria, Now Belhaven*, includes a street grid but, as the title suggests, may have been made just before the town's incorporation, when it was still known by its earlier name of Belhaven. This map may have been used for the sale of lots, which took place on July 14 and 15, 1749. It lists the name of the holder of each lot, its location, and the price paid for it. The names of Washington's older half brothers, Lawrence and Augustine, of William Fairfax, and of George William Fairfax appear on the list.

Based on these maps, some have erroneously concluded that Washington personally designed or was at least heavily involved in the city's formation. While both maps are clearly in

Washington's hand, no documentary evidence supports this claim. As he had with the maps he prepared during his first surveying trip, Washington probably derived or copied these from originals drawn by someone else--in this case John West Jr., Deputy Surveyor of Fairfax County, who is generally credited with the actual surveys.

### **Washington As Public Land Surveyor: The French and Indian War**

Washington's decisive involvement in the French and Indian War, in which he served as lieutenant colonel of the newly formed Virginia Regiment, was due in part to the backcountry knowledge and map-making skills he had gained from surveying. In 1753, one year before Lieutenant Governor Dinwiddie called for additional troops under Washington's command to defend Virginia's Ohio Valley frontier, Washington was chosen to deliver an ultimatum to the French at Fort Le Boeuf (site of present-day Waterford, Pennsylvania), insisting that they withdraw from the valley. When his report of this venture, *The Journal of Major George Washington*, was printed in Williamsburg and then reprinted in London, it catapulted him onto the world stage.

Although an engraved map was issued with the London edition of his journal, Washington prepared a sketch map of his journey to accompany the original publication. There are three known manuscript versions of this historically important map, two housed in the British Public Record Office and one in a private collection. Although older published maps were available to British colonial interests, this sketch map alone represents the state of geographical knowledge at the outbreak of the war. Together with Washington's report, the map dramatically illustrates the French threat in the Ohio Valley. It also contains one of the first references to the construction of a strategic fort at the junction of the Monongahela and Allegheny Rivers, the site of present-day Pittsburgh. Washington's role in beginning the French and Indian War seems to have been inescapable. He not only volunteered to deliver the message to the French authorities but produced a propaganda map highlighting the French threat and ambushed a French detachment in the war's first skirmish in 1754.

### **Washington As Land Speculator: Building a Gentleman's Estate**

In 1752 Washington made his first land purchase, 1,459 acres along Bullskin Creek in Frederick County, Virginia. This act inaugurated the second and more profitable phase of his cartographic career, in which he assumed the role of land speculator. Over the next half century Washington would continue to seek out, purchase, patent, and eventually settle numerous properties. His will, executed in 1800, lists 52,194 acres to be sold or distributed in Virginia, Pennsylvania, Maryland, New York, Kentucky, and the Ohio Valley. In addition to these properties, Washington also held title to lots in the Virginia cities of Winchester, Bath (now Berkeley Springs, West Virginia), and Alexandria, and in the newly formed City of Washington.

In 1758 Washington left military service and returned to civilian life and in January 1759 married Martha Custis, a wealthy widow. No sooner had the couple settled at Mount Vernon, which had become Washington's home, than he began to expand the estate. In 1760 a neighbor, William Clifton, approached Washington with an offer to sell a 1,806-acre tract on the northern border of the estate, and the two men settled on a price of £1,150 sterling. Shortly afterwards, however, Clifton agreed to sell the same tract of land to another neighbor, Thomson Mason, for a slightly higher price. Despite Clifton's original agreement and a series of angry letters, Washington eventually paid £1,250 sterling to secure the land for himself. The area became the Washingtons' River Farm.

The Geography and Map Division has two manuscript maps that Washington drew of the land he purchased from Clifton. The earlier is a map Washington copied in 1760, presumably during the purchase of the property. Titled *Plan of Mr. Clifton's Neck Land from an original made by T.H. in 1755 and copied by G. Washington in 1760*, the map includes survey courses and distances of the perimeter and of each field under cultivation in the tract. The map also includes



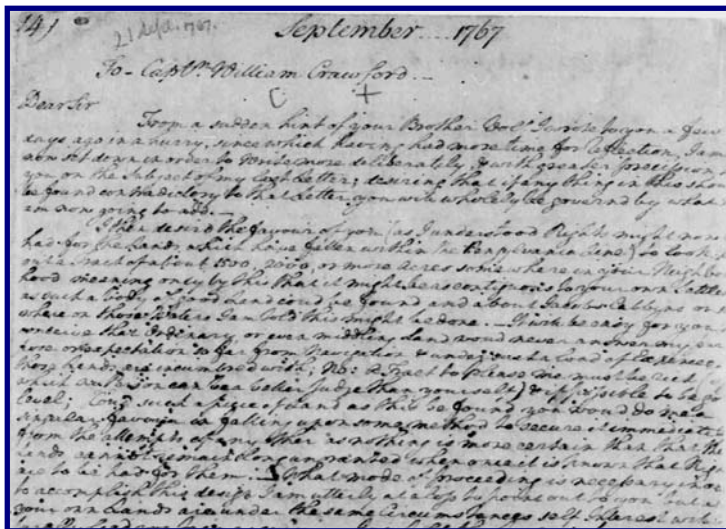
a lengthy list of farmers working the property. In 1766 Washington prepared a map of a much smaller portion of the property, entitled *A Plan of My Farm on Little Hunting Creek*. This map covers an 846-acre portion between Little Hunting Creek and the smaller Poquoson Creek. Both items are among the earliest extant maps of individual farms at Mount Vernon.

Over the course of his life, Washington maintained an interest in his farm, even while serving as President. Between 1786 and 1799 Washington exchanged nearly thirty letters with Arthur Young, a British agricultural supporter, in an attempt to refine and improve his farming methods. In a December 12, 1793 letter to Young, Washington enclosed a map of his farms which described the total amount of acreage on the Union, Dogue Run, Muddy Hole, Mansion House, and River Farms as well as the type of crops under cultivation.

### Washington As Land Speculator: Western Lands and the Bounty of War

Washington's lifelong interest in land speculation is illustrated in the fight over bounty lands promised to the veterans of the Virginia Regiment who fought with him in the French and Indian War. In this episode Washington acted on behalf of his fellow veterans as well as vigorously, sometimes aggressively, in staking out his own land claims.

In 1754, Lieutenant Governor Dinwiddie issued a proclamation designed to encourage enlistment in the local militia for the war against the French. In addition to their pay, those who enlisted in Lieutenant Colonel George Washington's fledgling Virginia Regiment were offered a share in two hundred thousand acres west of the Ohio River. Unfortunately for the men who fought under Washington in the Braddock and Forbes expeditions against the enemy at Fort Duquesne, they were not to see these bounty lands until more than twenty years had passed, during which time Washington led the struggle to secure their title.



At first, the formal conclusion in 1763 of the worldwide war between Britain and France, of which the French and Indian War had been a part, aroused hope that the land would be quickly granted. These expectations were overshadowed by the Royal Proclamation of 1763 which (among other provisions) forbade colonial governors from issuing land grants west of the Allegheny Mountains. Yet Washington chose to forge ahead, as evinced by a September 1767 letter to William Crawford, a Pennsylvania surveyor:

. . . I can never look upon the Proclamation in any other light (but this I say between ourselves) than as a temporary expedient to quiet the minds of the Indians. It must fall, of course, in a few years, especially when those Indians consent to our occupying those lands. Any person who neglects hunting out good lands, and in some measure marking and distinguishing them for his own, in order to keep others from settling them will never regain it. If you will be at the trouble of seeking out the lands, I will take upon me the part of securing them, as soon as there is a possibility of doing it and will, moreover, be at all the cost and charges surveying and patenting the same . . . By this time it be easy for you to discover that my plan is to secure a good deal of land. You will consequently come in for a handsome quantity.

Washington was clearly willing to take considerable risks in seeking out choice land for himself. In the same letter, however, he warned Crawford "to keep the whole matter a secret, rather than give the alarm to others or allow himself to be censured for the opinion I have given in respect to the King's Proclamation." He concluded by offering Crawford an alibi should his behavior be called into question. "All of this can be carried on by silent management and can be carried out by you under the guise of hunting game, which you may, I presume, effectually do, at the same time you are in pursuit of land. When this is fully discovered advise me of it, and if there appears a possibility of succeeding, I will have the land surveyed to keep others off and leave the rest to time and my own assiduity." In fact, the letter marked the beginning of a very profitable fifteen-year partnership. Less than two weeks after he had received it, Crawford informed Washington about several tracts in the vicinity of Fort Pitt, and the two men continued to collaborate until Crawford's death in 1782.

Washington persisted in his attempts to secure the military bounty lands. In 1769, Governor Botetourt of Virginia at last gave him permission to seek out a qualified surveyor and to notify all claimants that surveying would proceed. Once the surveying was completed the land could be divided among the remaining Virginia Regiment veterans or their heirs. Washington arranged to have Crawford appointed the "Surveyor of the Soldiers Land." In the fall of 1770 Washington, Crawford, and a fellow veteran named Dr. James Craik set out from Fort Pitt by canoe to explore possible sites for the bounty lands, making notes and observations as they journeyed to the junction of the Ohio and Great Kanawha Rivers and several miles up the Great Kanawha.

The next year, Crawford began to survey the tracts he and Washington had identified on the Great Kanawha expedition. Eight of these tracts are shown on a composite map now in the collections of the Geography and Map Division that Washington drew in 1774 from Crawford's surveys. Out of a total of 64,071 acres apportioned on the map, 19,383, or approximately 30 percent, were patented in Washington's name. In a 1794 letter to Presley Neville, Washington said that these lands were "the cream of the Country in which they are; that they were the first choice of it; and that the whole is on the margin of the Rivers and bounded thereby for 58 miles." In addition to Washington's acreage the map shows the lands surveyed and apportioned to other Virginia Regiment members, including Colonel Joshua Fry, Colonel Adam Stephen, Dr. James Craik, George Mercer, George Muse, Colonel Andrew Lewis, Captain Peter Hog, Jacob Van Braam, and John West. Several of these individuals were distinguished in their own right. Joshua Fry, for example, was one half of the team which produced the well-known 1755 *Map of Inhabited Parts of the State of Virginia*, considered to be one of the finest examples of colonial mapping; Jacob Van Braam had been Washington's interpreter at Fort Necessity in the French and Indian War; and Dr. James Craik was Washington's lifelong friend and physician.

### **Washington As Land Speculator: Cartography and Leadership in Revolutionary Times**

Any discussion of Washington's cartographic career would be incomplete without reference to the American Revolution. Deeply concerned about the lack of accurate maps available to his army, Washington created the office of Geographer to the Continental Army and appointed Robert Erskine to fill it in July 1777. Erskine, a Scottish-born engineer and inventor, may have come to Washington's attention with his plans for "Marine Chevaux de Frise" designed to block British ships from sailing up the Hudson River. Erskine's assistants in his Continental Army post included William Scull, author of a 1770 map of Pennsylvania and grandson of the noted cartographer Nicholas Scull; Simeon DeWitt, who would later become Surveyor General of New York State; and Thomas Hutchins, author of *A Topographical Description of Virginia, Maryland, and North Carolina*, published in 1778.

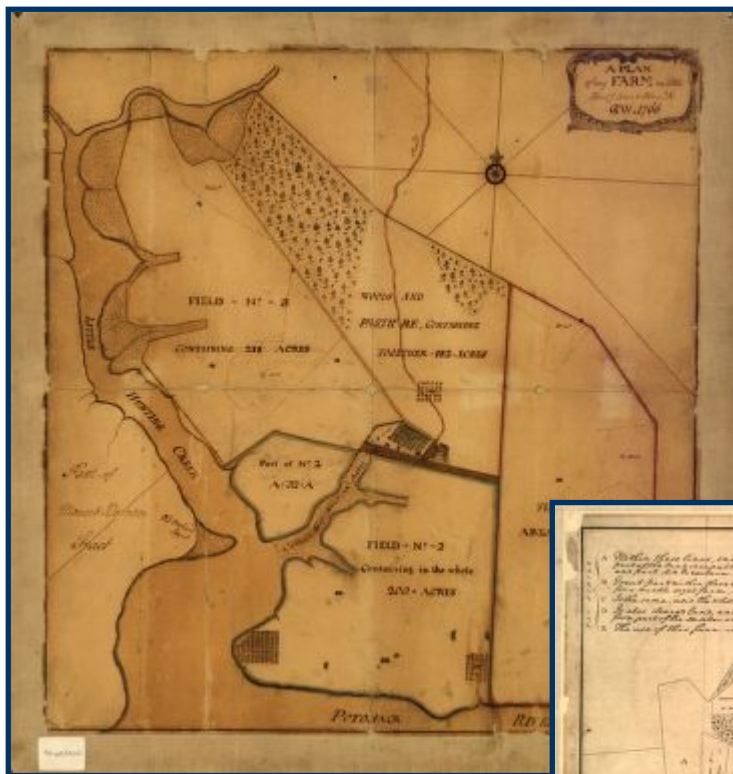
Washington died at Mount Vernon on December 14, 1799. In 1810 the executors of his estate prepared an inventory of Mount Vernon's contents. While Washington had a fairly extensive library, he was not a voracious reader and probably acquired many of the volumes as gifts. The

library inventory listed more than ninety maps and atlases, including John Henry's 1777 *Map of Virginia*; Joshua Fry and Peter Jefferson's *Map of the State of Virginia*; Reading Howell's 1777 *Map of Pennsylvania*; Thomas Hutchins's *Map of the Western Part of Parts of Virginia, Pennsylvania, Maryland and North Carolina*; Lewis Evans's *Map of Pennsylvania, New Jersey, New York, and Delaware*; "Sundry Plans of the Federal District" (including "One Large Draft"); Thomas Jefferys's *West India Atlas* and *American Atlas*; *Molls Atlas*; William Faden's *North America Atlas*; Christopher Colles's 1789 *Survey of the Roads of the United States*; and Jedidiah Morse's 1789 *American Geography*. These items might be found on any serious map collector's list of desiderata today.

Jedidiah Morse is remembered not only for publishing the first geographic work in America, but for a short section in his 1789 *American Geography* that (according to the historian Rosemarie Zagari) is actually the first and only authorized biography of Washington. Colonel David Humphreys, one of Washington's aides-de-camp during the American Revolution, originally conceived the project as a full-scale biography to be edited by Washington himself, but it was never finished. At some point Morse received a summary and published it in *American Geography* without attribution. Given Washington's experience organizing the western frontiers of Virginia as a public surveyor, the impact of the map and report he made of his expedition to the Ohio Valley in 1754, and his lifelong involvement with the making and using of maps, it is altogether fitting that he should have been celebrated in the first *American Geography*.

Library of Congress Map Collections Online: <http://rs6.loc.gov/ammem/gmdhtml/gmdhome.html>

**See George Washington's Maps and Surveys:**



[http://rs6.loc.gov/cgi-bin/query/r?ammem/gmd:@field\(NUMBER+@band\(g3882m+ct000085\)\)](http://rs6.loc.gov/cgi-bin/query/r?ammem/gmd:@field(NUMBER+@band(g3882m+ct000085)))



[http://rs6.loc.gov/cgi-bin/query/D?gmd:4:./temp/~ammem\\_JiPs::](http://rs6.loc.gov/cgi-bin/query/D?gmd:4:./temp/~ammem_JiPs::)

## The Mason-Dixon Line

(source: D. MacDonald, the 1984 *Old Farmer's Almanac*)

*Warning-For General Info and Entertainment Value Only, Some Data May Not be Accurate...*

[http://wesclark.com/jw/mas\\_dix.html](http://wesclark.com/jw/mas_dix.html) (found on Jonah World)

The Mason-Dixon Line may well be America's most famous boundary, but few Americans understand exactly what it divides. Since the early nineteenth century, the name Mason-Dixon has represented an imaginary border between the North and South; before the Civil War, it was thought to divide all free states from slave states. In fact, however, the Mason-Dixon Line was never more than the border between Maryland and Pennsylvania.

In 1632 Maryland had been granted "that part of the Bay of Delaware which lieth under the Fortieth Degree of North Latitude." Unfortunately, the fortieth parallel ran through the middle of Philadelphia; if upheld, the Maryland charter would deprive Philadelphia of her only harbor. The two colonies argued the case in English courts for decades. By 1750 the boundary had been officially located on paper, but someone still had to find it in the woods.

A survey team hired by Thomas Penn in 1761 spent several months trying to locate the border, but failed after letting a survey telescope warp in the rain. Penn was disgusted to find no Americans capable of the project and sent to England for some proper surveyors. He found Charles Mason and Jeremiah Dixon. These two men had traveled around the world studying astronomy and had mastered celestial navigation's complex mathematics. Both Maryland and Pennsylvania agreed to abide by the surveyors' results, and in 1763 Mason and Dixon began to work.



*Illustration by Harry Dierken*

The first step was to locate the exact starting point, 15 miles due south of Philadelphia. It was found in the middle of Mr. Alexander Bryan's plantation house, and an observation post was built in his front yard. From there the survey moved west following the line of latitude 39 degrees, 43 minutes and 17.6 seconds North. A wide swath was cleared by axemen, and limestone markers brought from England were placed each mile to mark the way. Every 11 1/2 miles the scientists would line up these posts through their telescopes and make elaborate measurements of star movement to compensate for error. All distances were measured with a 66 foot surveyor's chain.

In 1766 Indian resistance forced the work to halt for a year, but negotiations allowed the surveyors to continue until, 30 miles east of Pennsylvania's present southwest corner, they were ordered to stop for good - 233 miles, 3 chains and 38 links from the starting post in Mr. Bryan's yard. (*Presenter's note: this distance may not be correct, conflicts with other information*)

Today more of the old stone markers are found in doorsteps than along the boundary, but the Mason-Dixon Line still exists. It was resurveyed in 1849 and 1902 and found to be remarkably accurate; with minor adjustments, it still serves as the Maryland-Pennsylvania border, while the Mason-Dixon Line of the popular imagination fades into the past.

## Charles Mason (1728-1786)

**Charles Mason** (Oakridge Lynch, near Stroud, Gloucestershire, April 1728 – Philadelphia, October 25, 1786) was an English astronomer who made significant contributions to 18th-century science and American history, particularly through his involvement with the survey of the Mason-Dixon line, which came to mark the division between the northern and southern United States (1764–1768).



Online Resource: <http://www.nndb.com/people/528/000165033/>

**Born/Died:** April 1728 - October 25, 1786

**Birthplace:** Weir Farm, England (Oakridge Lynch near Stroud, Gloucestershire)

**Location of death:** Philadelphia, PA

**Cause of death:** Illness

**Remains:** Buried, Christ Church Burial Ground, Philadelphia, PA

**Father:** Charles Mason (baker/miller)

**Mother:** Anne Damsel Mason

**Wife:** Rebekah Mason (d. 1759)

**Wife:** Mary Williams Mason

English astronomer and surveyor Charles Mason spent his early career as an assistant at the Royal Observatory in Greenwich, where his chief responsibility involved compiling tables of lunar distances for deriving longitude. Accompanied by Jeremiah Dixon, he observed the transit of Venus from Cape Town in 1761, and the same two men were subsequently engaged to voyage to America and settle the long-running border dispute between the colonies of Maryland and Pennsylvania. Stone markers were embedded along their Mason-Dixon Line at every mile, engraved with a "P" for Pennsylvania on the north side and an "M" for Maryland on the south. When winter made their work impractical, Mason and Dixon used a pendulum clock to conduct the first scientific observations of gravity in America.

### **Author of books:**

*The Journal of Charles Mason and Jeremiah Dixon* (1969, posthumous)

## Jeremiah Dixon (1733-1779)

**Born/Died:** July 27, 1733 – January 22, 1779

**Birthplace:** Cockfield, England

**Location of death:** Durham, England

**Cause of death:** unspecified

**Remains:** Buried, Friends' Burial Ground, Staindrop, England

**Father:** George Dixon (coal mine owner, b. 13-Oct-1701, d. 8-Nov-1755)

**Mother:** Mary Hunter Dixon (b. 11-Aug-1694, m. 28-Feb-1724, d. 16-Jan-1773)

**Siblings:** George, Elizabeth, Ralph, Hannah

Online resource: <http://www.nndb.com/people/521/000165026/>

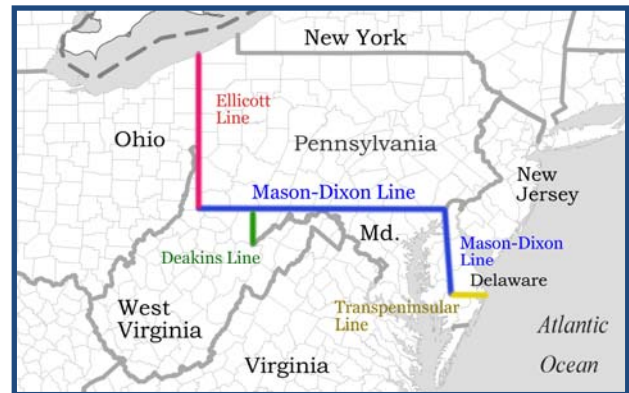
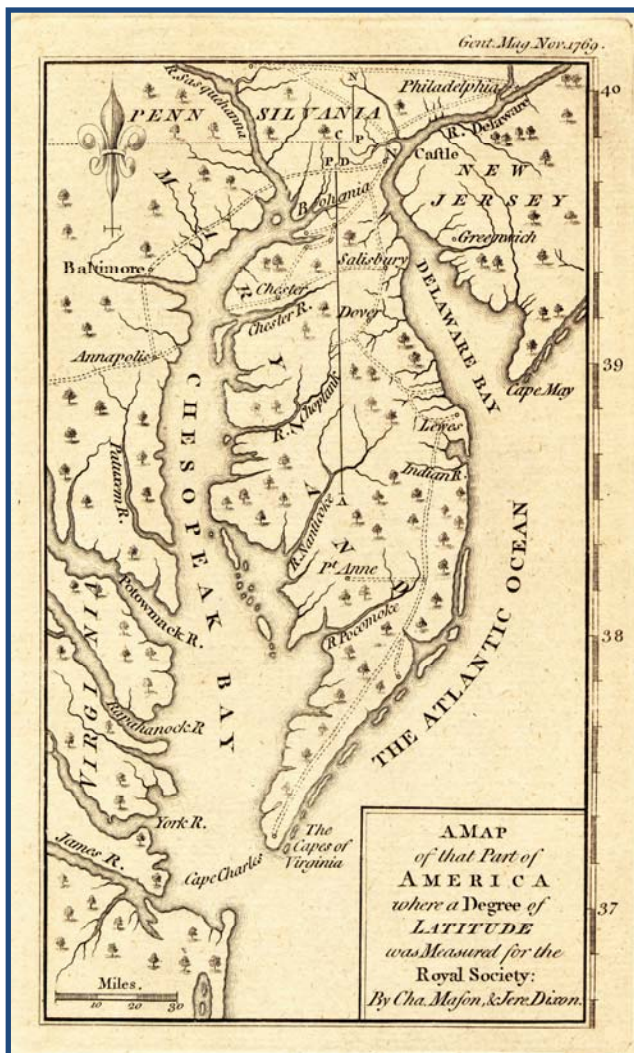
Jeremiah Dixon was an 18th century English surveyor and astronomer who worked with Charles Mason to establish the border between Maryland and Pennsylvania, which became known as the Mason-Dixon line. After Pennsylvania abolished slavery in 1781, the Mason-Dixon line was seen as a dividing point between America's free and slave states, and it is widely theorized that "Dixieland", an affectionate term for the lands south of the Mason-Dixon line, is derived from Dixon's name.

Dixon and Mason were hired in England by Frederick Calvert, who held the title of Baron Baltimore and was thus titleholder to Maryland, and Thomas Penn, son of William Penn and hereditary proprietor of Pennsylvania. In Calvert and Penn's employ, their assignment was to go to America and take charge of a survey -- already underway, but progressing slowly -- to accurately determine the border between the two colonies. The matter had been in dispute as early as 1691. Mason and Dixon began their work in late 1763, setting a "line" 230 miles long at 39 degrees, 43 minutes, and 26 <sup>3</sup>/<sub>10</sub> seconds latitude, and completing their task in 1767. (Presenters Note: this value is not the actual line of Latitude that was run, see Journals).

Dixon also served as Mason's assistant on a 1761 expedition observing the transit of Venus from the Cape of Good Hope, in hopes that data they collected could be used to calculate the sun's distance from the earth. Working without Mr. Mason, Dixon observed another transit of Venus from Norway in 1769. He never married, and when he was not gallivanting across the globe he lived in his birthplace, Cockfield, England, with his brother George.

**Author of books:**

*The Journal of Charles Mason and Jeremiah Dixon* (1969, posthumous)



**Of Further Interest:**

**Saving the Mason Dixon Line**

[http://news.nationalgeographic.com/news/2002/04/0410\\_020410\\_TVmasondixon.html](http://news.nationalgeographic.com/news/2002/04/0410_020410_TVmasondixon.html)

**Drawing the Line**

<http://teachingamericanhistorymd.net/00001/00000/000045/html/t45.html>

**History of the Mason Dixon Line (Cecil County, MD)**

<http://www.risingsunmd.org/department/division.php?fDD=19-57>

**Explore the Line**

<http://www.exploretheline.com/main.html>

**The Mason & Dixon Line Preservation Partnership:**

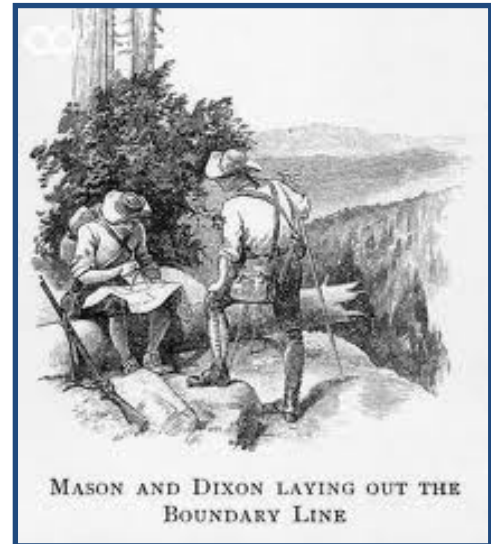
Online resource: <http://www.mdppp.org/>

## Excerpts from Journal of Mason and Dixon

<http://www.mdpp.org/pdf/library/JournalofMasonandDixon.pdf>

The latitude agreed upon for the boundary between Maryland and Pennsylvania was that of the "Post marked West," which was on a parallel 15 miles south of the southernmost point in Philadelphia. The latitude was found by Mason and Dixon to be  $39^{\circ}43'17.4''$  (page 103) and in moving west they always attempted to hold to this parallel. In the running of the boundary the length of the great circle arcs selected was 10 minutes, now known to equal 11.5151 statute miles. A fundamental quantity which had to be predetermined was the bearing on which to run the various 10-minute arcs of great circle in order to intersect the parallel at their extremities.

This was calculated from spherical trigonometry as follows:  
Latitude of Post marked West =  $39^{\circ}43'17.4''$  (page 69)  
Co-Latitude of Post marked West =  $50^{\circ}16'42.6''$  (page 69)



Example Transcription from Journal Publication referenced above:

tion of the southern extremity of the 15-mile line was definitely settled upon. On the nineteenth the two geodesists attended a meeting of the Commissioners from both provinces at New Castle and, after their return to the observatory in Mr. Bryan's field, made additional stellar observations for latitude on two nights. On the twenty-first and twenty-second they were again in conference with the Commissioners at New Castle. Following this, Mason and Dixon made additional latitude (zenith distance) observations until the end of the month. There were several nights of cloudy weather during this period when no astronomical work could be accomplished.

*June, 1764.* Zenith distance readings were continued until the ninth of the month, at which time the scientists spent about four days in reducing all observations. The latitude of the southern extremity of the 15-mile line was found to be  $39^{\circ}43'17.4''$  north (page 103 of the Journal). This would be the geographic latitude of the West and East Lines of the Pennsylvania-Maryland border. The Commissioners had determined that the geodesists should now proceed to the "Middle Point" to run the Tangent Line. Specifically, the Middle Point was a position on the present-day Delmarva Peninsula supposedly midway on a great circle (starting at  $N90^{\circ}W$ ) between Cape Henlopen and the Chesapeake Bay. It subsequently came to mark the southwest corner of Delaware. The Tangent Line is a line running slightly northwesterly

( $N3^{\circ}43'30''W$ ) from the Middle Point to a point of tangency with a circle of 12 miles radius around the belfry of New Castle courthouse. This line was to be the boundary between Maryland and Delaware (then included in the dominions of the Penns) along their respective eastern and western borders. Concurrently with this change in assignment, Mason and Dixon proceeded on the thirteenth of the month to pack up their scientific instruments and other equipment and make their way by wagons to New Castle, which was reached the following day. Axmen earlier furloughed were reemployed to assist in the new project. On the eighteenth the survey party left New Castle and arrived at Dover the following night. They encamped four nights later on the banks of the Nanticoke River, where tents were temporarily pitched. On the next day additional axmen were employed. The entire party, including a steward, tentkeepers, cooks, chain carriers, axmen, etc., now numbered thirty-nine persons—exceeding in size a present-day triangulation party of the Coast and Geodetic Survey. Equipment for travel included two wagons and eight horses. On the twenty-fifth the party with its equipment crossed the river in canoes, proceeded to the Middle Point, and began to run from thence a great circle arc in the northerly direction determined by geodetic calculations to give tangency to the circle of 12 miles radius. On the last day of the month they had again reached the Nanticoke. The river at this location is too wide to chain by usual procedures but the two scientists ac-

This gives the length of the Arc Line as 1.452 miles.

- e. The North Line, which is the distance from the Tangent Point to the northeast corner of Maryland less that portion of the line which is a secant to the circle of 12 miles radius. This equals 5.019 miles less 1.451 miles = 3.568 miles.

Some monuments were reset in 1849 with slight alterations in distance.

#### 6. CORRECTIONS TO THE TANGENT LINE

The Tangent Line as established by colonial surveyors was somewhat imperfect. It is believed that in general the procedure employed by Mason and Dixon in ultimately obtaining a tangency was to determine the error at the Tangent Point, to reset the point accordingly, and to move all other markers on the line by a distance proportional to their distance from the Middle Point. However, statements in the Journal on this matter are obscure.

#### 7. INSTRUMENTS AND EQUIPMENT USED

The principal item of equipment was an astronomical transit or "sector," as it was called. It is believed to have been similar to the zenith telescopes used until recent years by the U.S. Coast and Geodetic Survey.

The name evidently arose from the fact that the graduated arc for the reading of zenith distances actually was a sector of a circle. A micrometer made observations possible to a hundredth of a second of arc. Troughton and Simms of London were producing excellent instruments of this kind in 1849.

Other equipment consisted of a direction transit, a navigator's quadrant, chains of 66 feet (100 links per chain), an astronomical clock, wooden rods of 16.5 feet with spirit level, and other rods of 10 feet length. Also included were an up-to-date star catalogue by Dr. Bradley, adequate tables for astronomical corrections to observations, and seven-place logarithmic tables for numbers and sines and tangents. To these items may be added the other more common articles required by surveyors, camp equipment for thirty-nine men, and horses and wagons for transportation of personnel and gear.

At times Mason and Dixon worked under unusual and adverse circumstances, for example, on Christmas Day, and in snow two feet deep, and in temperatures as low as 22° below zero F. Their task was carried out in frontier country without benefit of modern methods and conveniences. But, after two hundred years, checks by the most refined methods of geodesy attest to the mathematical excellence of their accomplishment.

### Philadelphia 7th January 1764

Gentlemen:

I hope you have pleased yourselves with good horses and an agreeable companion.

The Temporary Line went through the Township of Darby and the plantation of Thomas Lyeth - through Springfield at Samuel Lewis' - through Providence Township at John Worrall's - through Edgmont Township at the widow Yarrels - through Thornburg at Isaac Vernon's - through West Town at Joseph Hunts and through West Bradford at Abraham Marshalls and John Newtons.

At the last place we began to set off the fifteen statute miles and we found it to be about one mile from Philadelphia. It is believed that either here or at some place about five or six miles more west there will be found the most level ground.

You can go near one Mr. Thomas Woodward's plantation in Marlboro Township. He is a surveyor and well acquainted with this country and can be of great use to you in showing you the best ground in any part of Chester County contiguous to the County of Newcastle.

I am sure everybody will be glad to oblige you and do you all the service in their power as soon as they are made acquainted with your fullest characters and the business you are employed in. I heartily wish you a good Journey and am

Gentlemen

Your most humble servant

Richard Peters



## **June 12, 1764**

NOTE: The Point 15 miles South of the Southernmost Point of the City of Philadelphia is situated in Mill Creek Hundred in the County of Newcastle, in a Plantation belonging to Mr. Alexander Bryan. The Middle of the Front of Mr. Bryan's House, bears from the point  $37^{\circ} 52'$  Northwesterly distant 23.38 chains (each chain 22 yards). It is close by the East side of a small Run, the Head of which is due North distant 5.00 chains.

From the Point to the Middle of a small rivulet called Muddy Run, on a due South course is 7.15 chains.

For the Latitude at the End of 15 Miles South of Philadelphia  
Mean  $39^{\circ} 43' 18.2''$  = Latitude North

## **June 1766**

### **18**

Set a post (18 Inches square, 3 feet in the ground and 5 above) at the distance of 3.66 chains, North of the Sector, marked M, on the South Side, P on the North Side, and W on the West: and began to cut a Visto in the true Parallel or Line between Maryland and Pennsylvania: By drawing it through points, laid off from the Line we have run, at every 10 chains.

### **19**

Continued the Visto or Line, toward the Post marked West in Mr. Bryan's field.

### **20**

Carried the Instruments to Mr. Stumblestones in Wills Creek Valley.

### **21**

Continued the Line to the 162 Mile post.

### **22 Sunday**

Went to see Fort Cumberland: It is beautifully situated on a rising ground, close in the Northwest fork made by the falling in of Wills Creek into Potowmack; The Fort is in bad repair; has in it at present only 10 Six Pounders. Going to the Fort I fell into General Braddock's Road, which he cut through the Mountains to lead the Army under his command to the Westward in the year 1755, but fate; how hard: made through the desert a path, himself to pass; and never; never to return. Continued the Line. Sent three men with the Telescope of the Sector to Captain Shelby's.

## **London, June 17, 1767**

Messrs. Mason and Dixon

I have received your Letter of the 6th of January with a particular account of your proceedings since your last, and we are very well satisfied with the accounts you give of them. We apprehend that you cannot have put Stones at every mile of the Line, from Cape Henlopen to the middle of the Peninsula, or in the Tangent Line, unless you had many made in Pennsylvania; the particular places you have noted down (where the Parallel of Latitude has crossed) we are very well pleased with; as we are, that you made use of your time, when not employed by us, to run the Degree of Latitude for the Royal Society. about which my Lord Morton often speaks to me.

I am at a loss to know, what was the Commissioners' reason for ordering you to run the parallel of Latitude from the place where the Meridian Line intersects it, to the River, as I have not received from them their minutes, and when you write next let me know them, lest they should omit it.

I shall expect to hear further from you, if you proceed to extend the Line farther Westward, in the mean time remain

Your affectionate Friend  
Thomas Penn

### **September 28, 1767**

Twenty-six of our Men left us; they would not pass the River for fear of the Shawnees and Delaware Indians. But we prevailed upon 15 ax men to proceed with us, and with them we continued the Line Westward in a direction found as on July 10th and the 26th of August thus.

### **October 1-2, 1767**

Continued the Line. Sent a Man to set Stones on the Line, etc. and to send us hands from Fort Cumberland. At 224 miles 5 chains Crossed the above run.  
224 miles 25 chains Crossed Ditto a 3rd time.  
Continued the Line. We have now our usual complement of Hands.

### **October 8, 1767**

Continued the Line.  
At 230 miles 22 chains Crossed a small run, running Northerly.  
At 230 miles 36 chains Crossed a small run, running Ditto.  
Continued the Line to a High ridge. At 231 miles 20 chains Crossed a War Path

At 231 miles 71 chains Dunchard Creek. This Creek takes its name from a small town settled by the Dunchards near the Mouth of this Creek on the Monaungahela; about 7 or 8 Miles North of where we crossed the said River. The Town was burnt, and most of the Inhabitants killed by the Indians in 1755.

At 232 miles 43 chains crossed Dunchard's Creek a second time.  
At 232 miles 74 chains crossed Ditto a third time.

This day the Chief of the Indians which joined us on the 16th of July informed us that the above mentioned War Path was the extent of his commission from the Chiefs of the Six Nations that he should go with us, with the Line; and that he would not proceed one step farther Westward.

### **October 10, 1767**

The Indians with us still persisting that they will not go any farther Westward with the Line; we sent for the Sector which was left at our Store House at the Forks of Cheat and Monaungahela.

### **11 Sunday, October 1767 (End of the Line)**

Set up the Sector in the Direction of our Line at the distance of 233 Miles 13 Chains and 68 Links from the Post marked West in Mr. Bryan's Field, and made the following Observations....

Miscellaneous Excerpts from Transcription of Mason and Dixon Journals:

Hence the Offsets at every Mile Post to our last Station at the Monongahela as follows.

Miles from the Post Marked West in Mr. Bryan's Field	Offsets to the Circle	Offsets in the Triangle B		True Offsets (North) C		
	Links	Chains	Links	Chains	Links	
222.301	0	0	0	0	0	Here AbC the true Parallel. A the Point begun at on the 29th of Sept. B where the Sector was set up, on the 11th of October where by the Observations, BC - 3 chains 38 Links. Hence the Offsets to the Chord ApC, Column B, from which Subtract the Offsets of the Chord to the Circle, gives the true Offsets North (from the Line run AB) as by Column C.
223	7	0	22	0	15	
224	15	0	53	0	38	
225	21	0	84	0	63	
226	25	1	15	0	90	
227	27	1	46	1	19	
228	27	1	77	1	50	
229	27	2	08	1	81	
230	25	2	39	2	14	
231	22	2	70	2	48	
232	16	3	01	2	85	
233	9	3	33	3	24	
233.171	0	3	38	3	38	

Note: The Sector stood on the top of a very lofty Ridge, but when the Offset was made of 3 Chains 38 Links it fell a little Eastward of the top of the Hills; we therefore extended the true Parallel 3 Chains 80 Links Westward which fell on the top of the said Ridge; there viz. at 233 Miles 17 Chains 48 Links from the Post marked West in Mr. Bryan's Field, we set up a Post marked W on the West Side and heaped around it Earth and Stone three yards and a half diameter at the Bottom and five feet High. The figure nearly conical.

Figure 317

1767

October

- 19 The Ax Men Returned from the Monongahela.
- 20 Began to open a Visto in the True Parallel Eastward.
- 21 Continued the said Visto Eastward.
- 22 Continued Ditto.
- 23 Continued Ditto. This day we were joined by the Hands we sent to open a Visto Eastward on the 25th of August.
- 24 Continued the Line to the 225 Mile Post.
- 25 Sun. Received a Letter from the Honorable Thomas Penn, Esquire.
- 26 Continued the Line to the River Monongahela.
- 27 Continued the Line.
- 28 Continued Ditto.
- 29 Rain.
- 30 Continued Ditto.
- 31 Continued the Line to the 209th Mile Post.  
Note: About 7 miles of the Weeks work was cut by the Hands sent back on the 12th Instant.

November

- 1 Sunday
- 2 Rain.
- 3 Continued the Line.
- 4 Continued the Line.
- 5 Continued the Line to the Post Standing at 199 Miles 63 Chains 68 Links which finished: There being now one continued Visto opened in the true Parallel from the Intersection of the North Line from the Tangent Point with the Parallel to the Ridge we left off at on the 8th of October last.  
Mr. Hugh Crawford with the Indians and all Hands (except 13 kept to Erect Marks in the Line etc.) Left us in order to proceed Home.
- 6 Continued making marks in the Line as before.
- 7 Continued Ditto to the 195th Mile Post.

1767

November

8 Sunday

- 9 Continued Making Marks.  
10 Continued Ditto.  
11 Continued Ditto.  
12 Continued Ditto. Snow.  
13 Continued Ditto. Snow about 2 Inches deep.  
14 Continued Ditto the 177th Mile Post.

15 Sunday

- 16 Continued Ditto.  
17 Continued Ditto.  
18 Continued Ditto. Snow and moved to the foot of Savage Mountain on the West Side. 319  
19 Continued Ditto. Snow 12 or 14 Inches deep. Made a pile of Stones on the Top of Savage or the great dividing Ridge of the Allegany Mountains. At 169 miles 26 chains being in the West side of Savage Mountain a small Run which is said to run Northward and then through a gap in Savage Mountain in to Willis Creek.  
20 The weather being so bad our Hands would not proceed on their work. We then proceeded to Mr. Kellams (in the Road from Fort Pitt to Fort Cumberland) at the Gap in Savage Mountain. Seven of our hands left us.

21

22 Sun. Proceeded to Mr. Tumblestone's in Willis Creek Valley.

- Employed more hands.  
23 Set a Pile of Earth etc. on the Top of Little Allegany Mountain.  
24 Set a Pile on the Top of Willis Creek and the Nobby Mountain.  
25 Set a Pile on the Tops of Elvits and Flintstone Mountains.  
26 Set Ditto on the Tops of the Big Warrior and Little Warrior Mountains.  
27 Set Ditto on the Ragged Mountain.  
28 Set a Pile at 143 miles 14 chains. Proceeded to 320  
the Top of Town Hill.

Where we found hands at work which had just finished a Pile employed by R. Farlow whom we dispatched on the second of October to set stones in the Lines, Piles, etc.

29 Sun. At Town Hill, Discharged Six Hands.

- 30 Piles being set by R. Farlow at 137 miles 11 chains and the Top of Sidelong Hill; and the Stones at the proper places\* to the 135th Mile Post from the Post marked West which reached to Sidelong Hill (inclusive) we proceeded to Mr. Matson's in the Conollaways. Sent Mr. Jonathan Cope (chain carrier) along the Line over the North Mountain to see that the Stones are at their Proper Places.

\*excepting the 80th Mile Post which is 125 Yards East of its true Place: The true place of the Mile Post falling in Marsh Creek was the reason of its being placed East.

The 120th Mile Stone stands five yards East of its true Place; it could not be set at its proper place for a great Stone. The above Mentioned Mile Posts, viz. 135th, the 80th and 120th are the 132nd, the 77th and the 117th from the Beginning of the West Line.

December

4

In Conococheague. Sent Expresses to Annapolis and Philadelphia to acquaint the Gentlemen Commissioners we shall be in Philadelphia the 15th Instant.

10

At Brandywine.

11

Received a Letter from Benjamin Chew, Esquire, (one of the Gentlemen Commissioners) acquainting us that the Commissioners were to meet at Christiana Bridge the 23rd Instant. 321

Gentlemen:

I received your favor of the 4th Instant and have only to inform you that we wrote yesterday to the Maryland Commissioners to meet us at Christiana Bridge on Wednesday the 23rd Day of this Instant. We expect them to confirm and put an end to this tedious Business so as to leave nothing more to be done than setting up the remainder of the Boundary Stones if it is possible to get them to their proper Stations at an Expense which can be borne. Wherever you may be in the Mean Time we hope to have your Company at the Bridge on the 23rd. I am Gentlemen,

Your Humble Servant

Philadelphia, Dec. 10, 1767 Benjamin Chew

(Undated Editorial Note:  
Here we have an envelope addressed to  
Messrs. Mason and Dixon)

1767

November

- 19 Our Journal from the 19th of November I have described for the Commissioners as follows (See original document--inconclusive.)  
Continued the Erecting Marks in the Line.  
Snow 12 or 14 Inches deep. Made a Pile of Stones on the Top of Savage or the great dividing Ridge of the Allegany Mountain.  
Note: West of this Mountain to the End of the Line the Mile Posts are 5 feet in length, 12 Inches Square, and set 2 feet in the Ground and round them are heaped Earth or Stone 8 feet in Diameter at Bottom and 2.5 feet High.
- 20 The Weather being so bad our Hands would not proceed on their work.
- 21\* Seven of our Hands left us.
- 22 Sun. \*\* The above Desertion of our Hands prevents us from making Heaps around the Mile Posts as before.  
Proceeded in to Wills Creek Valley.
- 23 Continued Erecting Marks on the Tops of the Mountains.  
Got more Hands.
- 24 Continued Ditto.
- 25 Continued Ditto.
- 26 Continued Ditto.
- 27 Continued Ditto.
- 28 Continued Ditto. Marks are now set on the Tops of all the High Ridges and Mountains to the Top of Sidelong Hill.
- 29 Sun. Discharged most of our Hands.  
Note: The Mile Posts between the Top of Savage Mountain and the End of the Line have Heaps of Earth or Stone Round them (as observed in Minutes of 19th November) of Eight feet Diameter at Bottom and 2 1/2 feet High.

324

(Editorial Note: \*This date appears erroneously listed by Mason as 27th Nov.  
\*\*This date also appears to be in error and is corrected herein.)

1768

June

9

Left Mr. Twiford's. Situated on the most Rural and delightful Banks of River Nanticoke. Here is the most pleasing Contemplative View I've ever seen in America; the River makes a turn from the Southward to the Eastward nearly at Right Angles and not one House to be seen on either side of the River, though the whole in View for 4 Miles: But Nature's genuine produce of Pine and Cedar on both sides its rural Banks, for which Ships resort from all parts to supply distant Climes destitute of so great a blessing.

10

At Dover.

11

At Mount Pleasant.

12 Sun.

At Ditto.

13

At Newark.

14

Discharged all Hands.

16

At Brandywine.

20

At Philadelphia.

21

Informed the Commissioners we had finished the mensuration of a Degree of Latitude for the Royal Society; and that we were now ready for returning Home. Were informed by the Reverend Mr. Peters and Mr. Chew, that a meeting of the Commissioners of both Provinces was necessary before we left the Continent; and that before this meeting, they desired to have the Plan of the Lines Engraved.

26 Sun.

Returned to the Forks of Brandywine.

29

At Philadelphia.

Moon Eclipsed

At 8h 48m by the Watch, the Moon entered the Cloud; the Eclipse not begun, Clouds continued etc.

359

July

8

Compared the 5 feet brass Rod (which we used on measuring the Lines for the Royal Society) with the brass Yard belonging to the 6 foot Sector; and found it one Division and a half of those divisions at the End of the Brass Rod (that is .015 of an Inch) shorter than the Yard in 5 feet. - Thermometer 70<sup>o</sup>; two of them agreeing, one of which we used on the Line. We compared the measures by taking the whole Yard and two feet, and also by taking 2.5 feet on the Yard twice, it always by many trials appearing that the Rod is not 5 feet according to the Yard; it wanting .015 of an Inch

$$\begin{array}{r}
 .015 \\
 \times 4 \\
 \hline
 .060 \text{ in one Level} \\
 \times 264 \\
 \hline
 240 \\
 360 \\
 \hline
 120
 \end{array}$$

15.840 = Inches in a Mile difference between the measures: therefore our measurements by the Levels should be 15.84 Inches in a Mile more than by the Chain Measure; that is; the distance between the Mile Posts should be one Mile and 15.84 Inches.

N. B. We have marked the length of the Yard from one End of the Rod by making a point between two scratches thus 1 · 1 on the Rod.

18

Acquainted Mr. Chew that Mr. Dawkins who had undertaken (by an agreement with the Reverend Mr. Ewen, one of the Gentlemen Commissioners) to Engrave a Plan of the Lines (and had about half finished it); would not proceed farther in the work.

19

Mr. Smither engaged to finish the Engraving the said Plans by an agreement with Mr. Chew.

August

16

Two Hundred copies of the Plans of the Lines Printed off.

360

(Editorial Note: Certificate of Admission to membership in the American Philosophical Society.)

Mr. Charles Mason  
is duly admitted a corresponding Member of the  
American Society held at Philadelphia for  
promoting useful knowledge. Dated 15 Day of  
April AD 1768.

Signed by order of the Society  
Cha. Thomson  
Corresponding Secretary

1788

August

17

The Rev. Mr. Peters informed us there was a Meeting of the  
Gentlemen Commissioners of both Provinces to be held at Newtown  
on Chester River in Maryland, the 25th Instant; where we  
were desired to attend.

25

Attended the Gentlemen Commissioners at New Town,  
where our accounts were settled, Certificates given us  
of the same; and the whole work of our part relating  
to the Business we had been engaged in for the Honorable  
Proprietors of Maryland and Pennsylvania, was entirely finished.  
At Philadelphia.

26

27

September

8

Left Ditto and proceeded for New York.

9

At Ditto.

10

At Ditto.

11

At 11h 30m A. M. went on Board the Halifax Packet Boat for  
Falmouth. Thus ends my restless progress  
in America.

C. Mason

362

Mr. Charles Mason

(Undated

An envelope addressed to Messrs. Mason and Dixon  
in the handwriting of Thomas Penn.)

To

Mr. Charles Mason and Jeremiah  
Dixon at the Prince of Wales's Arms  
the Corner of

Leicester Fields  
London

WINDSOR  
(Rubber Stamp)

363

Gentlemen:

I have received your letter and account and shall  
be in Town on Thursday about three o'clock. I am by appointment to  
dine with Mr. Wilmot Friday and would meet Mr. Hemessley an hour before dinner  
there or if he will tell you what time will best suit him and you inform  
me of it Thursday at three o'clock I will endeavour to make it suit me,  
and will see Mr. Wilmot the same morning at the House of Lords, I am

Your very humble Servant

Thomas Penn

Hope House near Windsor  
November 14. 1768

364

# SIGNERS OF THE DECLARATION OF INDEPENDENCE:

## Recommended Reading:

### The Declaration of Independence

<http://www.ushistory.org/declaration/document/index.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/intro.htm](http://www.nps.gov/history/history/online_books/declaration/intro.htm)

Brief Biographies of 56 Signers sourced from:

<http://www.ushistory.org/declaration/signers/index.htm>

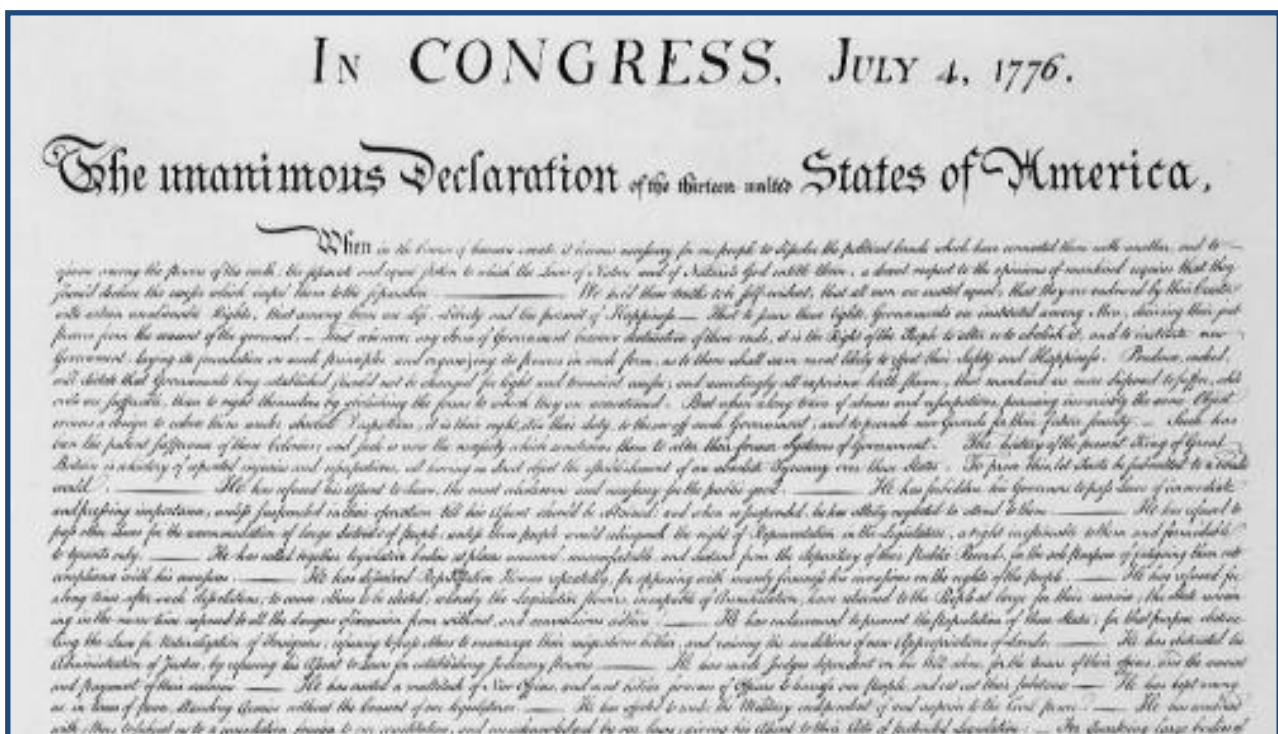
[http://www.nps.gov/history/history/online\\_books/declaration/bioa.htm](http://www.nps.gov/history/history/online_books/declaration/bioa.htm)

<http://colonialhall.com/biodoi.php>

Individual Images of Signers (represented below) by:

Ole Erikson, Engraver, c1876, Library of Congress

<http://loc.gov/pictures/resource/ppmsca.07837/>



## Credits:

Signers of the Declaration, Historic Places Commemorating the Signing of the Declaration of Independence, Library of Congress Catalog Card Number: 73-600028, Published in Washington, DC, 1973, United States Department of the Interior

Online Resource: [http://www.nps.gov/history/history/online\\_books/declaration/credits.htm](http://www.nps.gov/history/history/online_books/declaration/credits.htm)



## Six Surveyor “Signers”

### Stephen Hopkins 1707-1785

Representing Rhode Island at the Continental Congress

<http://www.ushistory.org/declaration/signers/hopkins.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio21.htm](http://www.nps.gov/history/history/online_books/declaration/bio21.htm)

<http://colonialhall.com/hopkins/hopkins.php>

This signer, the second oldest next to Benjamin Franklin, is noted for his tremulous signature. Aged 69 and afflicted with palsy, according to tradition he declared, "My hand trembles, but my heart does not!" Before, during, and after a comparatively brief stretch of congressional service, he occupied Rhode Island's highest offices and fostered the cultural and economic growth of Providence.



Hopkins attained success purely by his own efforts. Born in 1707 at Providence and equipped with but a modicum of basic education, he grew up in the adjacent agricultural community of Scituate, earned his living as a farmer and surveyor, and married at the age of 19. Five years later, in 1731, when Scituate Township separated from Providence, he plunged into politics. During the next decade, he held the following elective or appointive offices: moderator of the first town meeting, town clerk, president of the town council, justice of the peace, justice and clerk of the Providence County court of common pleas, legislator, and speaker of the house.

In 1742, about 2 years after he and his brother Esek founded a mercantile-shipping firm, Stephen moved back to Providence. For the next three decades, he built up his business and would probably have acquired a fortune had he not at the same time supported a variety of civic enterprises and broadened his political activities. He continued in the legislature, served as assistant and chief justice of the Superior Court and ten-time Governor, and represented Rhode Island at various intercolonial meetings. At the Albany Congress (1754), he cultivated a friendship with Franklin and assisted him in framing a plan of colonial union that the congress passed but the Colonies rejected. The next year, 2 years after the demise of his first wife, who had given birth to five sons and two daughters, he remarried.

About this time, Hopkins took over leadership of the colony's radical faction, supported by Providence merchants. For more than a decade, it bitterly fought for political supremacy in Rhode Island with a conservative group in Newport, led by Samuel Ward, a political enemy of Hopkins.

Hopkins was a man of broad interests, including humanitarianism, education, and science, and exerted his talents in many fields. About 1754 he helped set up a public subscription library in Providence. He acted as first chancellor of Rhode Island College (later Brown University), founded in 1764 at Warren, and 6 years later was instrumental in relocating it to Providence. He also held membership in the Philosophical Society of Newport. Strongly opposing slavery, in 1774 he authored a bill enacted by the Rhode Island legislature that prohibited the importation of slaves into the colony—one of the earliest antislavery laws in the United States.

Long before, Hopkins had sided with the Revolutionaries. In 1762 he helped found the influential *Providence Gazette and Country Journal*. Two years later, he contributed to it an article entitled "The Rights of the Colonies Examined," which criticized parliamentary taxation and recommended colonial home rule. Issued as a pamphlet the next year, it circulated widely throughout the Colonies and Great Britain and established Hopkins as one of the earliest of the patriot leaders. He also sat on the Rhode Island committee of correspondence and carried on with his duties in the legislature and Superior Court while a Member of the Continental Congress (1774-76). He served on the committees that prepared the Articles of Confederation

and that created the Continental Navy and appointed Esek Hopkins as its commander in chief. Ill health compelled Stephen to retire in September 1776, a month after he signed the Declaration.

Hopkins declined subsequent reelections to Congress, but sat in the State legislature for a time and took part in several New England political conventions. He withdrew from public service about 1780 and died 5 years later in Providence at the age of 78. He was interred in the North Burial Ground.

<b>Born:</b>	March 7, 1707
<b>Birthplace:</b>	Providence, R.I.
<b>Education:</b>	(Lawyer, Educator)
<b>Work:</b>	Speaker of the Rhode Island Assembly, (circa 1750-2); Delegate to the Albany Convention, 1754; Member of the Continental Congress, 1774-78; Member of Rhode Island Legislature.
<b>Died:</b>	July 13, 1785

### James Smith 1719-1806

Representing Pennsylvania at the Continental Congress

<http://www.ushistory.org/declaration/signers/smith.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio45.htm](http://www.nps.gov/history/history/online_books/declaration/bio45.htm)

<http://colonialhall.com/smith/smith.php>

James Smith, a lawyer who had emigrated from Ireland to the Colonies, represented the Pennsylvania back-country in Revolutionary conventions and the Continental Congress. He also helped draft the Pennsylvania constitution.



Smith, the second son in a large family, was born in northern Ireland about 1719. When he was around 10 years old, his father emigrated to America and settled on acreage west of the Susquehanna River in York County, Pa. James studied surveying and classical languages at Rev. Francis Alison's academy in New London, Pa., and then read law in the office of his elder brother at Lancaster. He was admitted to the bar in 1745 and moved westward to the Shippensburg vicinity in Cumberland County. A lack of clients and surveying work caused him about 1750 to relocate eastward to York, where he married a decade later. Although he was the only lawyer in town until 1769, he experienced difficulty in recruiting clients. Probably for this reason, during the years 1771-78 he undertook iron manufacturing, but the venture failed and he lost £5,000.

Smith early emerged as a local Whig leader. In 1774, at a provincial convention in Philadelphia, he supported nonimportation measures and advocated an intercolonial congress. That same year, at York he raised a militia company, in which he served as captain and later honorary colonel. At two provincial meetings in 1775-76, he championed the interests of the western counties and helped formulate resolutions calling for independence, the strengthening of defenses, and establishment of a new provincial government. During the latter year, he sat on the drafting committee in the State constitutional convention. Elected to Congress (1776-78) on July 20, 1776, after the vote on independence had been taken, he arrived in Philadelphia in time to sign the Declaration. Among his colleagues he gained a reputation as a wit, conversationalist, and eccentric.

During the period 1779-82 Smith held various State offices: one-term legislator, judge of the Pennsylvania high court of errors and appeals, brigadier general in the militia, and State counselor during the Wyoming Valley land dispute between Pennsylvania and Connecticut. In 1785 he turned down reelection to Congress because of his age. His major activity prior to his retirement in 1801 was the practice of law. Smith died at about the age of 87 in 1806 at York,

Little is known about his work, because a fire destroyed his office and papers shortly before he died.

<b>Born:</b>	Circa 1719
<b>Birthplace:</b>	Dublin, Ireland
<b>Education:</b>	Informal, Classical education. Apprenticed law with brother George. (Lawyer)
<b>Work:</b>	Resume with dates.
<b>Died:</b>	July 11, 1806

### Roger Sherman 1721-1793

Representing Connecticut at the Continental Congress

<http://www.ushistory.org/declaration/signers/sherman.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio44.htm](http://www.nps.gov/history/history/online_books/declaration/bio44.htm)

<http://colonialhall.com/sherman/sherman.php>

By dint of self-education, hard work, and business acumen, Roger Sherman soared above his humble origins to prominence in local, State, and National political affairs. He was a member of the committee that drafted the Declaration of Independence. He and Robert Morris were the only men to sign the three bulwark documents of the Republic: the Declaration of Independence, Articles of Confederation, and Constitution. Twice married, Sherman fathered 15 children.



In 1723, when Sherman was 2 years of age, his family relocated from his Newton, Mass., birthplace to Dorchester (present Stoughton). As a boy, he was spurred by a desire to learn, and read widely in his spare time to supplement his minimal education at a common school. But he spent most of his waking hours helping his father with farming chores and learning the cobbler's trade from him. In 1743, or 2 years after his father's death, Sherman joined an elder brother who had settled at New Milford, Conn.

Purchasing a store, becoming county surveyor, and winning a variety of town offices, Sherman prospered and assumed leadership in the community. Without benefit of a legal education, he was admitted to the bar in 1754 and embarked upon a distinguished judicial and political career. In the period 1755-61, except for a brief interval, he served as a representative in the colonial legislature and held the offices of justice of the peace and county judge. Somehow he also eked out time to publish an essay on monetary theory and a series of almanacs incorporating his own astronomical observations and verse.

In 1761, abandoning his law practice, Sherman moved to New Haven, Conn. There he managed a store that catered to Yale students and another one in nearby Wallingford. He also became a friend and benefactor of Yale College, functioning for many years as its treasurer.

Meanwhile, Sherman's political career had blossomed. He rose from justice of the peace and county judge to an associate judge of the Connecticut Superior Court and to representative in both houses of the colonial assembly. Although opposed to extremism, he early joined the fight against Britain. He supported nonimportation measures and headed the New Haven committee of correspondence.



Residence of Roger Sherman, in New Haven, Conn., from 1768 until his death in 1793. (Lithograph by an unknown artist, from William Brotherhead, *The Book of the Signers*, 1861, Library of Congress.)

Sherman was a longtime and influential Member of the Continental Congress (1774-81 and 1783-84). He won membership on the committees that drafted the Declaration of Independence and the Articles of Confederation, as well as those concerned with Indian affairs, national finance, and military matters. To solve economic problems, at both the National and State levels, he advocated high taxes rather than excessive borrowing or the issuance of paper currency. While in Congress, Sherman remained active in State and local politics, continuing to hold the office of judge of the Connecticut Superior Court, as well as membership on the council of safety. In 1783 he helped codify Connecticut's statutory laws. The next year, he was elected mayor of New Haven (1784-86).

Sherman could not resist the lure of national service. In 1787 he represented his State at the Constitutional Convention, in which he played a major role. He conceived and introduced the Connecticut, or so-called Great, Compromise, which broke a deadlock between the large and small States by providing for a dual legislative system—representation by proportion of population in the lower house and equal representation in the upper house. He was also instrumental in Connecticut's ratification of the Constitution.

Sherman capped his career by serving as U.S. Representative (1789-91) and Senator (1791-93), espousing the Federalist cause. He died at New Haven in 1793 at the age of 72 and is buried in the Grove Street Cemetery.

<b>Born:</b>	April 19, 1721
<b>Birthplace:</b>	Newton, Mass.
<b>Education:</b>	Informal, Cobbler, Surveyor, Lawyer. Honorary M.A. from Yale.
<b>Work:</b>	Admitted to Bar in New Milford Connecticut, 1754; Justice of the Peace, elected to General Assembly, representing New Milford Connecticut, 1755-58, 1760-61; Commissary for the Connecticut Troops, 1759; Elected to various Upper and Lower House offices representing New Haven, 1760s, 1770s; Judge of the Superior Court of Connecticut, 1766-1789; Elected to Continental Congress, 1774-81, 1783-84; Distinguished member of the Constitutional Convention, 1787; Elected US Senator for Connecticut, 1791-93.
<b>Died:</b>	July 23, 1793

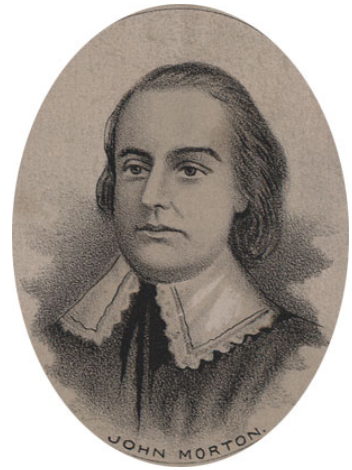
## John Morton 1724-1777

Representing Pennsylvania at the Continental Congress

<http://www.ushistory.org/declaration/signers/morton.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio34.htm](http://www.nps.gov/history/history/online_books/declaration/bio34.htm)

<http://colonialhall.com/morton/morton.php>



John Morton, one of the nine signers from Pennsylvania, is better known there than in the Nation, but he rendered meritorious service to both. He cast the decisive ballot that swung his State over to an affirmative vote for independence in the Continental Congress. He was the first signer to die.

Morton was born of Finnish-Swedish descent in 1725, shortly after the death of his father, on a farm in Ridley Township, Chester (present Delaware) County. John Sketchley, an Englishman who subsequently married the widowed mother of the youth, reared and educated him. Their relationship was apparently close, for Morton later named his eldest son Sketchley. The stepfather, learned in mathematics, taught the boy the three R's as well as surveying. He practiced that profession on and off all his life, as well as farming, politics, and jurisprudence. He married in his early 20's, in 1748 or 1749, and fathered five daughters and four sons.

At the age of 30, Morton entered politics, which from then on absorbed most of his energies. From 1756 until a few months before he died in 1777, he served 18 terms in the colonial/State legislature (1756-66 and 1769-76), which he presided over during the last year and a half. In 1774 he won appointment as an associate justice of the Pennsylvania Supreme Court.

Meantime, despite his rise in State circles, Morton had always maintained strong ties with his own county. He resided there all his life, remained active in civic and church affairs, and stayed close to the people. Between terms of office as county justice of the peace (1757-64 and 1770-74), he worked in a tour as sheriff (1766-69).

Morton's service to the Nation began in 1765, while he was a member of the Pennsylvania legislature. He and two colleagues represented the colony at the Stamp Act Congress in New York. His most dramatic act as Delegate to the Continental Congress (1774-77), in which he numbered among the moderates, was his sudden and crucial switch on July 1, 1776, to the side of his friend Benjamin Franklin and James Wilson in the vote for national independence. On the final vote the next day, these three ballots outweighed those of Thomas Willing and Charles Humphreys. Robert Morris and John Dickinson being purposely absent, Pennsylvania registered a "yea." Less glamorously, Morton was a member of many committees, in 1777 chairing the committee of the whole on the adoption of the Articles of Confederation, finally ratified after his death. Within a year of signing the Declaration, in the spring of 1777, Morton fell ill and died on his farm at the age of 51. A few months earlier, he had bequeathed his land and property, including a few slaves, to his wife and five daughters and three surviving sons. But he could not will them security; shortly after his demise they had to flee from their home in the face of an imminent British attack. Morton's grave is located in Old St. Paul's Cemetery in Chester, Pa.

<b>Born-Died:</b>	1724 - April, 1777
<b>Birthplace:</b>	Ridley, Pennsylvania
<b>Education:</b>	Informal (Judge)
<b>Work:</b>	Elected to Provincial Assembly, 1756-1775; Delegate to the Stamp Act Congress, 1765; President of the Provincial Assembly, 1775; Offices in Pennsylvania: Justice of the Peace, High Sheriff, Presiding Judge of the General Court and the Court of Common Pleas, Associate Judge of the Supreme Court of Pennsylvania; Elected to Continental Congress, 1774-77.

## Abraham Clark 1725-1794

Representing New Jersey at the Continental Congress

<http://www.ushistory.org/declaration/signers/clark.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio7.htm](http://www.nps.gov/history/history/online_books/declaration/bio7.htm)

<http://colonialhall.com/clark/clark2.php>

Abraham Clark—farmer, surveyor, self-taught lawyer, and politician—typifies those signers who dedicated most of their lives to public service but never gained national renown.



An only child, Clark was born in 1726 at his father's farm in what is now Roselle, N.J. In his boyhood, he was too frail for farm work. He received only a minimum of formal education, but in his independent study demonstrated a bent for mathematics. When he reached manhood, besides farming his father's land, he took up surveying and informally read law to aid in mediating land disputes. Although probably never admitted to the bar, he gained a reputation as the "poor man's counselor" for his willingness to dispense free legal advice or accept produce or merchandise in lieu of a fee. He married in 1749, and fathered 10 children.

Clark followed his father's example by taking an active part in civic affairs. For many years, he served the Crown as high sheriff of Essex County and as clerk in the colonial legislature. The exact date of his entry into the patriot ranks is not known, but in the period 1774-76 he became a member and secretary of the New Jersey council of safety, attended several Revolutionary conventions, and won election to the provincial assembly. In June of the latter year, he and four other men replaced the existing congressional Delegates, who were opposing independence.

Despite poor health and deep concern for the welfare of his family and the safety of his home, located not far from an area of British occupation, Clark stayed in Congress throughout the War for Independence and sometimes sat concurrently in the State legislature. He suffered additional anxiety when the British captured his two soldier sons and incarcerated them for a time on the prison ship *Jersey*, where hundreds of captives perished.

At the end of the war in 1783, Clark resumed his life back in New Jersey. The next year he began a 3-year tour in the State legislature, which he represented at the Annapolis Convention (1786). The following year, ill health prevented his attendance at the Constitutional Convention. He subsequently opposed the Constitution until it incorporated the Bill of Rights. In 1787-89 he returned to the Continental Congress, but in 1789-90 remained in New Jersey as commissioner to settle his State's accounts with the Federal Government. In 1791-94 he climaxed a long career of alternating State-National service as a Representative in the Second and Third Congresses.



Thousands of American soldiers, including two of Abraham Clark's sons, endured the agonies of captivity on the British prison ship *Jersey*. (Wood engraving, by an unknown artist, after F. O. C. Darley, from Henry Howe, *Life and Death on the Ocean*, 1855, Library of Congress.)

Clark was stricken with a sunstroke in 1794 at his birthplace in Roselle, where he had lived all his life except when political duty called him away. He died a few hours later, at the age of 68, in the nearby town of Rahway and was buried there in the Presbyterian Cemetery.

He is said to have been active in community politics until his death in 1794. Clark Township, New Jersey, is named in his honor.

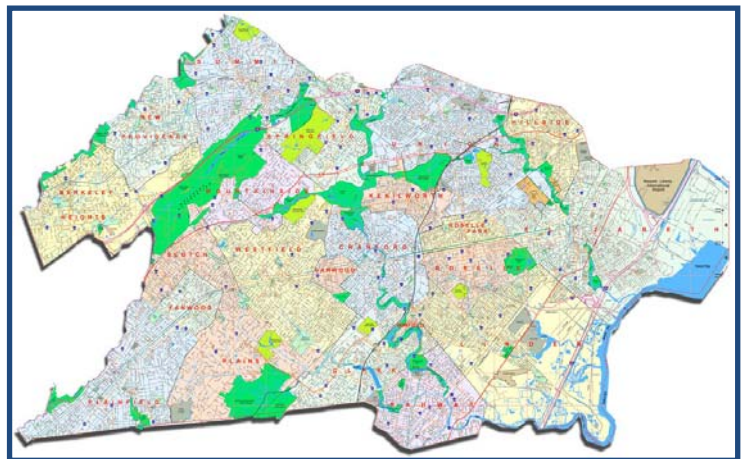
<b>Born:</b>	February 15, 1725
<b>Birthplace:</b>	Elizabethtown, New Jersey
<b>Education:</b>	Self-taught, Surveying, Law (Surveyor, Lawyer, Sheriff)
<b>Work:</b>	Land attorney; High Sheriff of Essex County, NJ.; Member of New Jersey Provincial Congress; Elected to the Continental Congress, 1776 ~1784.
<b>Died:</b>	September 15, 1794

### History of Clark Township, NJ

Reprinted from online resource: <http://ourclark.com/government/history>

The Township of Clark, New Jersey, is the product of many years of social, economic and political change. First established from Lenape Indian Hunting Grounds, it became a crossroad of the American Revolution. Our community would develop into an agricultural paradise that enabled many European immigrants to strive for the American Dream.

The territory of land that would become Clark was originally a part of several of the early villages of the State and of Union County, but it was in 1858 after the village of Rahway incorporated itself into a city that the land of present day Clark, officially became a community. The City of Rahway designated this land as the 5th Ward of Rahway and Clark remained a part of Rahway until 1864 when the 357 residents of the ward declared their independence and established their own town. They took the name of the signer of the Declaration of Independence, Abraham Clark.



The town in its early years was a small quiet farm community, but as the years went by Clark would slowly change. In the early part of the century large farms were slowly being sub-divided into smaller track farms. It was not until State Highway No. 4, present day Garden State Parkway, cut the town in half, that our community witnessed massive change. Many farmers facing economic changes as well as the need for the housing shortage of post World War II began to sell their land to housing developers. It is these land developers who in a period of 40 years, 1949 to 1989, changed the appearance of Clark, from a community of wide open land to a town with numerous housing developments and business centers.

Clark today is a thriving suburban community which is at 98% capacity of occupied land, along with having a population of 14,597.

## Thomas Jefferson 1743-1826

Virginia House of Burgesses, Representing Virginia at the Continental Congress

<http://www.ushistory.org/declaration/signers/jefferson.htm>

[http://www.nps.gov/history/history/online\\_books/declaration/bio24.htm](http://www.nps.gov/history/history/online_books/declaration/bio24.htm)

<http://colonialhall.com/jefferson/jefferson.php>

<http://www.monticello.org/site/jefferson>

An intellectual and political titan who ranked among the most brilliant men of his time, Thomas Jefferson richly contributed to his State and Nation—as statesman, diplomat, scientist, architect, author, and educator. Graced with a wide-ranging and probing mind, he also delved into linguistics, law, art, geography, ethnology, music, agriculture, paleontology, botany, meteorology, geology, parliamentary practice, and invention.



As author of the Declaration of Independence, influential political theorist, cofounder of the Democratic-Republican Party, Virginia legislator and Governor, first U.S. Secretary of State, second Vice President, and third President, Jefferson has left an indelible impression on our political system and philosophy. Beyond that, he laid the basis for the westward expansion of the Nation; and two of his disciples, Madison and Monroe, followed him into the White House.

Like most successful politicians, however, Jefferson created his share of enemies and felt the sting of failure. Inability to reconcile his contradictory traits of idealism and pragmatism resulted in inconsistencies that rendered him vulnerable. He lacked the aggressiveness and charisma of many leaders. To compensate for his basic shyness and his deficiencies as a speaker, he mastered written expression and learned to exercise administrative power. His governorship ended ignominiously. And his vision of an agricultural America, peopled by well-educated and politically astute yeomen farmers was never to be realized. Yet none of these factors diminishes his stature or undermines his achievements.

The eldest of two sons in a family of ten, Jefferson was born in 1743 at Shadwell, a frontier plantation in Goochland (present Albemarle) County, Va. But 2 years later his father, Peter, a self-made surveyor-magistrate-planter who had married into the distinguished Randolphs, moved his family eastward to Tuckahoe Plantation, near Richmond. His reason for doing so was a promise he had made to his wife's newly deceased first cousin, William Randolph, to act as guardian of his son, Thomas Mann Randolph. Young Jefferson passed most of his boyhood in the Randolph home, beginning his elementary education with private tutors. In 1752, when he was about 9 years old, the family returned to Shadwell. His father died 5 years later and bequeathed him almost 3,000 acres.

In 1760, at the age of 17, Jefferson matriculated at the College of William and Mary, in Williamsburg. An incidental benefit was the chance to observe the operation of practical politics in the colonial capital. Jefferson graduated in 1762, studied law locally under the noted teacher George Wythe, and in 1767 was admitted to the bar.

At Shadwell, Jefferson assumed the civic responsibilities and prominence his father had enjoyed. In 1770, when fire consumed the structure, he moved to his nearby estate Monticello, where he had already begun building a home. In 1772 he married Martha Wayles Skelton, a widow. During their decade of life together, she was to bear six children, but only two daughters reached maturity.

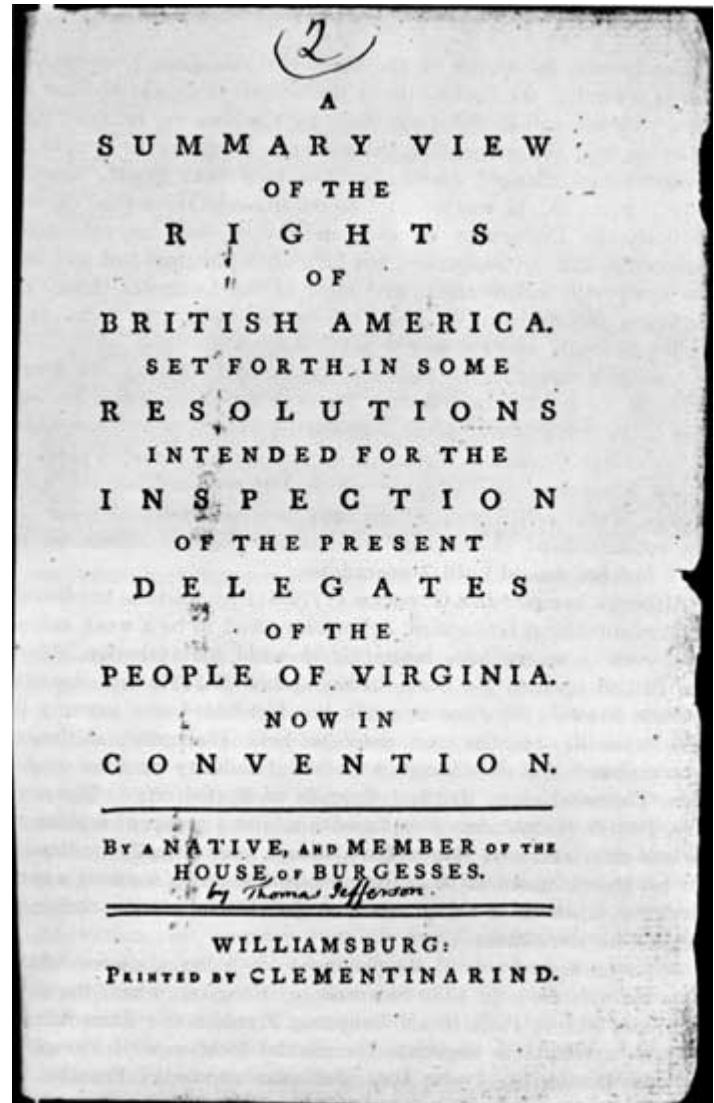


Meanwhile, in 1769 at the age of 26, Jefferson had been elected to the House of Burgesses in Williamsburg. He was a member continuously until 1775, and aligned himself with the anti-British group. Unlike his smooth-tongued confreres Patrick Henry and Richard Henry Lee, Jefferson concentrated his efforts in committee work rather than in debate. A literary stylist, he drafted many of the Revolutionary documents adopted by the House of Burgesses. His *A Summary View of the Rights of British America* (1774), one of the most influential essays of the era, disavowed parliamentary control of the Colonies and contended that they were tied to the King only by their own volition and recognition of mutual benefits.

Jefferson utilized the same working methods in the Continental Congress (1775-76), where his decisiveness in committee contrasted markedly with his silence on the floor. His colleagues, however, rejected several of the documents he drafted his first year because of their extreme anti-British tone. But, by the time he returned the following May, after spending the winter in Virginia, the temper of Congress had changed drastically. The very next month, though only 33 years old, he was assigned to the five-man committee chosen to draft the Declaration of Independence, a task his colleagues assigned to him. In September, not long after Congress had adopted the draft with modifications and most of the Delegates signed it, Jefferson returned to Virginia— anxious to be nearer home and feeling he could make a deeper political mark there.

A notable career in the House of Delegates (1776-79), the lower house of the legislature, followed. There Jefferson took over leadership of the "progressive" party from Patrick Henry, who relinquished it to become Governor. Highlights of this service included revision of the State laws (1776-79), in which Jefferson collaborated with George Wythe and Edmund Pendleton; and authorship of a bill for the establishment of religious freedom in Virginia, introduced in 1779 but not passed until 7 years later.

Although hampered as Governor (1779-81) by wartime conditions and constitutional limitations, Jefferson proved to be a weak executive, even in emergencies hesitating to wield his authority. When the British invaded the State in the spring of 1781, the situation became chaotic. On June 3, while the legislature was meeting in Charlottesville because the redcoats held Richmond, Jefferson recommended the combining of civil and military agencies under Gen. Thomas Nelson, Jr., and virtually abdicated office. The next day, British raiders almost captured him and a group of legislators he was entertaining at Monticello. Although later formally vindicated for his abandonment of the governorship, the action fostered a conservative takeover of the government and his reputation remained clouded for some time.



Title page of Thomas Jefferson's pamphlet [A Summary View \(1774\)](#), one of the earliest and most influential Revolutionary tracts. (*Library of Congress.*)

Jefferson stayed out of the limelight for 2 years, during which time his wife died. In 1783 he reentered Congress, which the next year sent him to Paris to aid Benjamin Franklin and John Adams in their attempts to negotiate commercial treaties with European nations. During his 5-year stay, Jefferson succeeded Franklin as Minister to France (1785-89), gained various commercial concessions from and strengthened relations with the French, visited England and Italy, absorbed European culture, and observed the beginnings of the French Revolution.

In the years that followed, interspersed with pleasant interludes at Monticello, Jefferson filled the highest offices in the land: Secretary of State (1790-93), Vice President (1797-1801), and two-term President (1801-9). Ever averse to political strife, he occupied these positions as much out of a sense of civic and party duty as personal ambition. Aggravating normal burdens and pressures were his bitter feuds with Alexander Hamilton on most aspects of national policy, and the vindictiveness of Federalist attacks. Jefferson took considerable satisfaction, however, from his many accomplishments. Among these was the cofounding with James Madison of the Democratic-Republican Party, which in time drove the Federalists out of power.

Physically and mentally exhausted, in 1809 Jefferson retired for the final time to Monticello. He retained his health and varied interests and corresponded with and entertained statesmen, politicians, scientists, explorers, scholars, and Indian chiefs. When the pace of life grew too hectic, he found haven at Poplar Forest, a retreat near Lynchburg he had designed and built in 1806-19. His pet project during most of his last decade was founding the University of Virginia (1819), in Charlottesville.

Painfully distressing to Jefferson, however, was the woeful state of his finances. His small salary in public office, the attendant neglect of his fortune and estate, general economic conditions, and debts he inherited from his wife had taken a heavy toll. He lived more frugally than was his custom in an attempt to stave off disaster and sold off as many of his lands and slaves as he could. But when a friend defaulted on a note for a large sum, Jefferson fell hopelessly into debt and was forced to sell his library to the Government. It became the nucleus of the Library of Congress.



The University of Virginia in 1826, the year of the death of founder Jefferson. (Engraving, 1826, by Benjamin Tanner, Library of Congress.)

Jefferson died only a few hours before John Adams at the age of 83 on July 4, 1826, the fiftieth anniversary of the adoption of the Declaration of Independence. For his tombstone at Monticello, ignoring his many high offices and multitudes of other achievements, he chose three accomplishments that he wanted to be remembered for: authorship of the Declaration of Independence and the Virginia Statute for Religious Freedom and the founding of the University of Virginia.

<b>Born-Died:</b>	April 13, 1743- July 4, 1826
<b>Birthplace:</b>	Shadwell, Virginia
<b>Education:</b>	William and Mary College (Lawyer)
<b>Work:</b>	Admitted to Virginia bar, 1767; Elected to Virginia House of Burgesses, 1769; Delegate to the Continental Congress, 1775-76; Virginia House of Delegates, 1776-79; Elected Governor of Virginia, 1779, 1780; Dispatched to England to treat for peace with Gr. Britain, 1782; Associate Envoy to France, 1784; Minister to the French Court, 1785; Secretary of State, 1789; Established Democratic-Republican party, 1793; Vice President of the United States, 1796; President, 1801; Established University of Virginia, 1810.

## Thomas Jefferson, the Surveyor

Online resource: <http://www.monticello.org:8081/site/research-and-collections/surveying>

Thomas Jefferson's father, Peter Jefferson, worked as a surveyor and cartographer for most of his adult life. From 1745 until his death in 1757, he surveyed for the colony in one official capacity or another. Peter Jefferson's more famous accomplishments included marking the location of the Fairfax line in 1746, extending in 1749 the boundary between North Carolina and Virginia, and helping produce in 1751 one of the first accurate maps of the colony of Virginia. He must have taught his son the finer points of surveying as he organized the fields of his Albemarle County farm.

In June 1773, Thomas Jefferson followed in his father's footsteps when he received a commission as surveyor of Albemarle County. Unlike his father, however, he discharged his duties through deputies and resigned the post the following year. When in 1778 he produced a sketch map of his native county, he did so for his own use, not for the public good. Surveying for the younger Jefferson was primarily a tool for imposing order on his farms. Dozens of plats survive today from projects he undertook to rationalize and describe his lands in Bedford and Albemarle counties. In 1793, for example, Jefferson surveyed his fields in order to revise their boundaries in accordance with new schemes for crop rotation. An 1806 survey established a



Jefferson's Theodolite

better route from the Rivanna River to Monticello, while a project in 1809 mapped the location of the farms and buildings within the fourth roundabout. Surveying for a Virginia planter was clearly a useful skill, one Jefferson believed subsequent generations of his family ought to continue to practice. At the age of 66, he ran chains through the woods on the slopes of Monticello in an attempt to teach some of his grandsons the rudiments of the profession.

Surveyors in Jefferson's period required only two pieces of specialized equipment: a standard-length chain for measuring distance along a straight line and an instrument for calculating the angle between two distant objects. Jefferson's surveying chain, called "Gunter's chain," was 66 feet in length. It was divided into 100 links, each 7.92 inches long.

There were 80 chains in a mile, and 10 square chains equaled an acre. For the other tool, most surveyors used a special compass that the British called a "circumferentor." Jefferson owned at least two such surveying compasses. In 1778, he acquired a more sophisticated instrument for the task, a theodolite produced by Jesse Ramsden. The Ramsden theodolite could turn angles in both the horizontal and vertical planes, which extended its utility beyond surveying. In 1815, for example, he employed it to determine the elevation of the Peaks of Otter in the Blue Ridge Mountains.

### Of Further Interest...

Massachusetts Historical Society. Thomas Jefferson Papers: An Electronic Archive.

<http://www.masshist.org/thomasjeffersonpapers/>

## **Jefferson and the Lewis and Clark Expedition**

Thomas Jefferson commissioned the Lewis and Clark Expedition in 1803 to explore the northwest territory in order to observe a transcontinental route and natural resources. In 1804, about 45 men headed by Meriwether Lewis and William Clark moved up the Missouri River, crossed the Rocky Mountains, and from the Columbia River, reached the Pacific Ocean by November 1805. They returned to St. Louis by September 1806 with great fanfare and important information on native people, plants and animals, and geography.

## **Jefferson and the Public Land Survey System**

Online resource: [http://www.blm.gov/wo/st/en/prog/more/cadastralsurvey/cadastral\\_history.html](http://www.blm.gov/wo/st/en/prog/more/cadastralsurvey/cadastral_history.html)

The rectangular survey system, which was first proposed by Thomas Jefferson and enacted into law by the Land Ordinance of 1785, forms the backbone of the Nation's land surveys. As a young nation, we faced the daunting task of surveying over 1.8 billion acres of public domain lands acquired through the Louisiana Purchase, the Alaska Purchase, and other acquisition actions. Contract surveyors chosen through competitive bidding were eventually replaced with today's professional cadre of Cadastral Surveyors.

Online resource: <http://west.stanford.edu/cgi-bin/pager.php?id=49>

*Following the American Revolution a number of states ceded to the federal government their claims to land lying west of the Appalachian Mountains. The cessions eased the worries of landless states, cooled tensions between states with overlapping land claims, and relieved the states of war debts. In turn, the federal government had to determine what to do with the ceded land. The Land Ordinance of 1785 laid the foundation for future American land policy. After the Indian title had been purchased, the ceded lands were to be systematically surveyed, prior to sale or settlement, into townships. Of the thirty-six sections of 640 acres in each township, the sixteenth was reserved "for the maintenance of public schools." The passage below is an excerpt from the Land Ordinance of 1785.*

An Ordinance for ascertaining the mode of disposing of Lands in the Western Territory. Be it ordained by the United States in Congress assembled, that the territory ceded by individual States to the United States, which has been purchased of the Indian inhabitants, shall be disposed of in the following manner: . . .

The Surveyors, as they are respectively qualified, shall proceed to divide the said territory into townships of six miles square, by lines running due north and south, and others crossing these at right angles, as near as may be . . .

The lines shall be measured with a chain; shall be plainly marked by chaps on the trees and exactly described on a plat; whereon shall be noted by the surveyor, at their proper distances, all mines, salt springs, salt licks and mill seats, that shall come to his knowledge, and all water courses, mountains and other remarkable and permanent things, over and near which such lines shall pass, and also the quality of the lands . . .

The board of treasury shall transmit a copy of the original plats, previously noting thereon, the townships, and fractional parts of townships, which shall have fallen to the several states, by the distribution aforesaid, to the Commissioners of the loan office of the several states, who, after giving notice of not less than two nor more than six months by causing advertisements to be posted up at the court houses, or other noted places in every county, and to be inserted in one newspaper, published in the states of their residence respectively, shall proceed to sell the townships, or fractional parts of townships, at public venue . . .

Done by the United States in Congress assembled, the 20th day of May, in the year of our Lord 1785, and of our sovereignty and independence the ninth.

Charles Thomson, Secretary.  
Richard H. Lee, President.

## **Andrew Ellicott (January 24, 1754 – August 28, 1820)**

Andrew Ellicott was a U.S. surveyor who helped map many of the territories west of the Appalachians, surveyed the boundaries of the District of Columbia, continued and completed Pierre (Peter) Charles L'Enfant's work on the plan for Washington, D.C., and served as a teacher in survey methods for Meriwether Lewis.



Online resource: <http://www.surveysinc.com/history/surveyors.html>

A commissioned officer in the Maryland militia, Major Ellicott was a highly accomplished surveyor having gained experience by working on the survey which extended the Mason-Dixon line westward to its originally intended terminus at the southwest corner of Pennsylvania in 1784. Mason and Dixon had been forced to halt their work in 1767 due to the threat of hostile Indians. Subsequently, Ellicott was hired to establish the western boundary of Pennsylvania, a line that came to be known as "Ellicott's Line".

In 1789, Virginia and Maryland had joined in donating territory to establish a new federal capital city on the banks of the Potomac River. At the suggestion of President Washington, Secretary of State Thomas Jefferson asked Ellicott to perform the survey of the District of Columbia. Ellicott and his assistant, Benjamin Banneker, began work in the spring of 1791.

The following year Washington asked Ellicott to finish Pierre Charles L'Enfant's plan for the city. L'Enfant was a military engineer appointed by President George Washington to plan the new nation's capital city in March 1791. L'Enfant had been dismissed from the project because his perfectionism made him difficult to work with, however, his unwavering dedication to perfection shaped a plan of such genius that it survived and even ennobled the architectural mistakes of many who came after him.

Ellicott found it necessary to make some changes to L'Enfant's plan. He changed the alignment of Massachusetts Avenue, eliminated five short radial avenues, added two short radial avenues southeast and southwest of the Capitol, and named the city streets. In less than one month Ellicott had a plan ready for the engravers. A few months later Ellicott, like L'Enfant, found himself at odds with the Commissioners and resigned from the project.

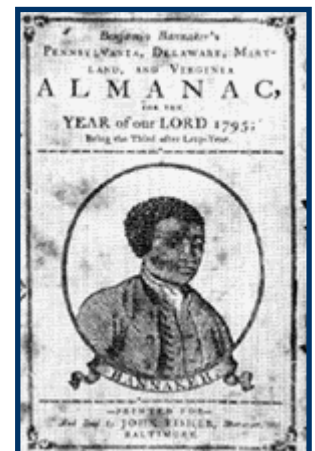
In 1796, Ellicott accepted the position of Commissioner of the survey of the international border between the U.S. and Spanish territories in Florida. In 1813, he was appointed by President Monroe as an instructor of mathematics at the Military Academy at West Point. In 1817, he was called on to be the astronomer for the United States as part of the proceedings of the treaty of Ghent, establishing the Canada - U.S. boundary concluding the war of 1812.

[Andrew Ellicott His Life in Letters](#) (Google Books)

[The Journal of Andrew Ellicott](#) (Google Books)

## **Benjamin Banneker (1731 - 1806)**

African-American farmer, self-educated mathematician, astronomer, and surveyor. Although he received little schooling, Banneker demonstrated exceptional scientific ability and taught himself advanced mathematics and astronomy. In 1789 U.S. President George Washington appointed Banneker to the commission charged with the survey, planning and construction of Washington D.C. With Major Andrew Ellicott, he helped to survey the site of the national capital between 1791 and 1793.



# Lewis and Clark and the Corps of Discovery Exhibition (1804 – 1806)

Before:



After:



## William Clark (August 1, 1770 – September 1, 1838)

William Clark was an American explorer, soldier, Indian agent, and territorial governor. A native of Virginia, he would also grow up in pre-statehood Kentucky before later settling in what later became the state of Missouri. Along with Meriwether Lewis, Clark led the Lewis and Clark Expedition of 1803 to 1805 across the Louisiana Purchase to the Pacific Ocean. Before the expedition, he served in a militia and the United States Army. Afterward he served in a militia and as governor of the Missouri Territory. From 1822 until his death in 1838, he served as Superintendent of Indian Affairs.



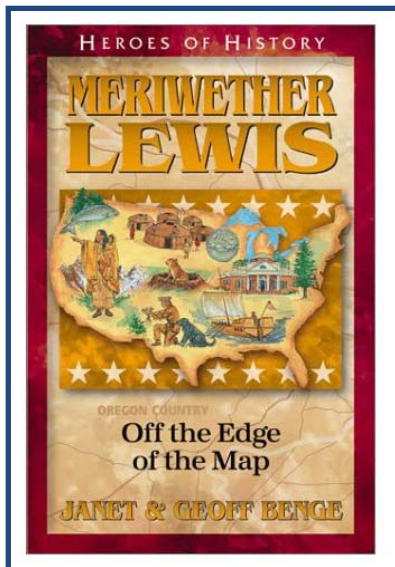
## Meriwether Lewis (August 18, 1774 – October 11, 1809)

“Of courage undaunted, possessing a firmness & perseverance of purpose which nothing but impossibilities could divert from its direction, careful as a father of those committed to his charge, yet steady in the maintenance of order & discipline, intimate with the Indian character, customs & principles, habituated to the hunting life, guarded by exact observation of the vegetables & animals of his own country, against losing time in the description of objects already possessed, honest, disinterested, liberal, of sound understanding and a fidelity to truth so scrupulous that whatever he should report would be as certain as if seen by ourselves, with all these qualifications as if selected and implanted by nature in one body, for this express purpose, I could have no hesitation in confiding the enterprize to him.”



-Thomas Jefferson, 1813 (describing Meriwether Lewis)

**Meriwether Lewis** was an American explorer, soldier, and public administrator, best known for his role as the leader of the Lewis and Clark Expedition also known as the Corps of Discovery, with William Clark, whose mission was to explore the territory of the Louisiana Purchase. President Thomas Jefferson appointed him Governor of Upper Louisiana in 1806.



### Meriwether Lewis Biography

Many thanks to Kim's friends, authors, Janet and Geoff Benge for granting permission to "reprint" excerpts from their "Heroes of History" series, *Meriwether Lewis: Off the Edge of the Map*, published by Emerald Books, 2001. This educational series is designed for the "Young Adult" reading level, but it is also very good for busy people who like an easy flow, larger font size and an entertaining reading experience packed with action and historically accurate, well researched information and skillful storytelling.

Janet and Geoff's generosity in sharing their work and insight with us is greatly appreciated. This book and others in their series can be obtained through the usual online sources like [Amazon.com](https://www.amazon.com) and will soon be available through their own website, <http://bengebooks.com/heroesofhistorym.html>

<Excerpts from, *Meriwether Lewis: Off the Edge of the Map and Journals*>



## The Vastness of the Task Before Him

January 18, 1803, the day the bill authorizing the expedition was passed, was a Tuesday. By the following Friday, Meriwether Lewis was sitting in the office of Treasury Secretary Albert Gallatin, who was also a well-respected mapmaker. Meriwether had been at many dinner parties with the treasury secretary, but this was the first time they had discussed the upcoming expedition. The trip had been a secret until the bill authorizing it passed. And even now, only Jefferson's cabinet and members of Congress knew about the plans for the trip.

Gallatin's eyes shone with excitement as he talked to Meriwether. "What an opportunity this is!" he said. "I only wish I were younger. I would come along with you myself."



Meriwether laughed. "You're not the first person to say that to me!"

"And think what it will do for the United States," the treasury secretary continued. "You must concentrate on the country around the Missouri River. I'm quite convinced it will be the next large tract of land lying outside the boundaries of the Union where people from the United States will settle. We must know as much about it as we can. Make sketches of the trees, assess the annual rainfall, take temperature readings, and bring back as many plant and animal specimens as you can, preferably alive." He glanced at Meriwether. "But that's not what the president sent you to talk to me about, is it? What is it he wants from me?"

Meriwether smiled. He was quickly getting used to listening to the special instructions and plans everyone seemed to have for the Corps of Discovery. It was going to be difficult to achieve half of what people had in mind for the expedition.

"President Jefferson has urged me to take careful observations of latitude and longitude at all of the remarkable points along the Missouri River and westward," Meriwether began. "He wants me to pay special attention to river mouths, rapids, islands, and other natural markings. And I am to record all my observations on a birch paper map, since it is less likely to be spoiled if it gets damp."

"Definitely the best paper for the job," Gallatin said. "I think the best thing would be for me to have a map made for you that shows all we know about the land from the Mississippi River west to

the Pacific Coast. As I'm sure you're aware, there are only three points on the map that are fixed by latitude and longitude. They are St. Louis, the Mandan villages, and the mouth of the Columbia River. You see how important your work will be! You can fill in the blank spaces on the map as you go, plotting longitude and latitude."

"I'll do my best, sir," Meriwether replied.

An hour later, after Meriwether had thanked Gallatin for his help, the words "you can fill in the blank spaces as you go" were still echoing in his head. No one had any idea of the variety of landforms, climate, and rivers that awaited the expedition west of St. Louis. For a moment Meriwether found himself stunned by the vastness of the task before him.

With the mapmaking process under way, Meriwether turned his attention to the matter of transportation. He intended to go as far as he could by boat and then trade with the Indians for horses when the river ran out. But what kind of boat should he use? He discussed the question many times with Jefferson, and eventually they agreed on a solution. The expedition would use a large keelboat to take them as far up the Missouri River as possible. From there they would use canoes to take them to the headwaters of the river. Then they would need a different sort of boat altogether to carry overland to the headwaters of the Columbia River. This vessel would be a large, collapsible, iron-framed canoe that could be bolted together and covered with animal skins. This would provide

balls, a pair of horse rifles, and 176 pounds of the best imported gunpowder.

The gunpowder was to be stored in fifty-two watertight lead canisters. With meticulous attention to detail, Meriwether calculated that when each empty canister was melted down, it would provide the right weight of metal to be molded into an even number of rifle balls. Of course he field-tested every single item before ordering it. He was determined to have the best and most modern equipment possible. And just in case they ran out of gunpowder along the way, Meriwether used his own money to buy the very latest weapon—an air rifle that did not need gunpowder to propel the bullet from its barrel.

Meriwether tried to think of every possibility and to carefully weigh the value of every single item he ordered. After all, on occasion his men would have to carry or drag every piece of equipment across unknown terrain.

Finally, on April 12, 1803, with little work left to do on the iron-frame canoe, Meriwether felt free to move on to Lancaster, Pennsylvania. On the way there he stopped in Frederickstown, Maryland, where he ordered two hundred pounds of “portable soup”—a mixture of dried beans and dried vegetables that could be boiled with water to make a nutritious meal. Meriwether had often carried portable soup with him when he was army paymaster, and he considered it one of the most important items he had ordered so far for the trip.

When he arrived in Lancaster, Meriwether went straight to the home of Andrew Ellicott, America’s

leading astronomer and a personal friend of Thomas Jefferson. Dr. Ellicott had already received a letter from the president asking him to help Meriwether learn all he needed to know about navigating from the stars and the sun.

The two men spent many hours practicing calculations using a sextant, a chronometer, a surveyor’s compass with a ball and socket, a two-pole chain, and a set of plotting instruments. The crash course in navigation took three weeks, at the end of which Dr. Ellicott was pleased with the progress of his pupil.

With navigational skills in hand, it was time for Meriwether to journey on to Philadelphia, where Jefferson had set up the next appointment for him. This time Meriwether met with William Patterson, an expert in selecting navigation equipment. Together they went to South Third Street, where Patterson pointed out the most accurate chronometer money could buy. At \$250 it was not cheap, but Meriwether knew how important a clock would be in establishing longitude and making accurate maps, and so he gladly paid the asking price. It was by far the most money he paid for a single item that he planned to take with him.

Meriwether then moved on to meet with Dr. Benjamin Rush, who along with the president had been a signer of the Declaration of Independence. Dr. Rush was the United States’ most respected physician, and Meriwether was eager to ask his advice on what medicines he should take along on the journey. Dr. Rush had concocted pills that he claimed could cure just about any ailment. He

called them "Rush pills," and they consisted of six parts mercury and one part chlorine. And "Rush" was the right name for them because they were potent purging pills. They set off something of an explosion in the stomach, causing its contents to be emptied in a matter of seconds.

Meriwether ordered six hundred Rush pills along with thirty other kinds of drugs. He also ordered lancets, syringes, bandages, tourniquets, and forceps. Like many other frontiersmen, Meriwether was capable of setting a bone or digging a bullet out of a man's chest. These skills, along with the herbal medicines he had learned about from his mother, made Meriwether feel confident he could handle most of the medical situations they would encounter.

Like everyone else who knew of the expedition, Dr. Rush had his own set of questions he wanted Meriwether to answer along the way. He had arranged his questions into lists concerning the moral, religious, and medical practices of the Indians. He wanted to know such detailed information as what an Indian's pulse might be in the morning and in the evening, and whether it rose immediately after eating. He also wanted to know if they practiced suicide or murdered each other, as well as how often they bathed.

Meriwether tucked the list into his coat pocket and agreed to do all he could to answer the questions. He also promised to look out for signs of the Jewish religion on the western plains. Like many other well-read men of the time, Dr. Rush believed

that the fabled "Lost Tribe of Israel" might well be wandering around out there somewhere.

By now Meriwether's mind was bursting with all the new skills and information he had acquired. But Jefferson had arranged more tutorials for him. Meriwether's next stop was at the home of Dr. Benjamin Barton, a professor of botany at the University of Pennsylvania. Dr. Barton lived just a few houses down from Independence Hall. He showed Meriwether how to preserve plant and animal specimens and how to label and keep them safe while traveling over rough terrain. He also gave Meriwether lists of scientific words and their definitions, which he could use to write precise descriptions of all he saw.

Meriwether's last stop in Philadelphia was a visit with Dr. Casper Wistar, an expert in fossils. Dr. Wistar talked to Meriwether about how to excavate fossils and pack them. He had high hopes that the expedition would uncover some major fossil sites and maybe even find a few live mastodons left over from the prehistoric age. Meriwether was not so excited about this thought. He wondered how effective his weapons would be against such a massive creature!

By June 7 Meriwether had achieved all he had set out to do in Philadelphia. It was time to travel back to Washington to make the final arrangements. He arranged for the thirty-five thousand pounds of goods he had ordered so far to be taken by wagon to Pittsburgh, where he hoped to pick them up within a week or so.

few details were known about how they lived in the wild. Meriwether did spot one curious animal that he described in his journal as having the "Shape & Size like that of a Beaver, his head mouth etc. is like a Dog with Short Ears, his Tail and Hair like that of a Ground Hog, and longer...his legs are short and when he moves Just sufficient to raise his body above the Ground, He is of the Bear Species." The animal he was referring to was a badger. Meriwether also spotted a coyote, which at first he thought was a fox. And when a huge cloud appeared on the horizon, everyone was amazed to see that it was a flock of pelicans. Meriwether shot one of the birds and examined it with great interest. He took all sorts of measurements, including the size of its beak to see how much liquid it would hold, which turned out to be five gallons.

As July wore on and the summer sun became intense, Meriwether found he had to allow time for the men to rest at midday. Even so, five or six men were sick at any one time, mainly from heatstroke or dysentery. Dr. Rush's pills, now aptly named "thunderclaps," were doled out for all sorts of ailments.

Men also became sick with malaria, and they were doctored with the powdered bark of a tree from South America. The bark contained quinine, which, although it did not cure the disease, helped lessen its symptoms.

As the men grew weaker, it became more difficult for them to stay awake at night on guard duty. This worried Meriwether and William because they

knew how important the security of the camp was. Although no one had yet seen an Indian, the French trappers said it was only a matter of time before they would encounter some.

Meriwether did not want such an encounter with the Indians to be at gunpoint in the dead of night. So he was very upset when Alexander Willard, one of the corps's best men, was caught sleeping on duty. This was a serious infraction, one that U.S. Army regulations stated could be punished with a death sentence. Meriwether had no intention of putting one of his men to death, but everyone in the Corps of Discovery had to understand how important it was to be vigilant at all times, especially while on guard duty. A court-martial was convened, and Willard was found guilty and sentenced to one hundred lashes each evening for four days.

On July 21, sixty-eight days after leaving Camp Wood, the expedition reached the mouth of the Platte River. Meriwether had been told it marked the boundary of Oto, Pawnee, and Loup Indian lands. But where were the Indians? Meriwether climbed a bluff overlooking the river for a good view of the surrounding countryside. It was a magnificent sight. Meriwether had never before seen such an expanse of flat land without trees. Grass a foot high swayed in the breeze as far as he could see. But not an Indian was to be seen. Surely, Meriwether told William that night, they must encounter a tribe soon.

Meriwether was also frustrated because he would not be able to give a favorable report to President Jefferson that the Teton Sioux had accepted the authority of the United States. He didn't have much time, though, to dwell on how badly their encounter with the Teton Sioux had gone. It was already fall, and the expedition needed to keep moving upriver if it hoped to make it into Mandan territory before winter.

---

## Chapter 12



# Fort Mandan

The afternoon shadows lengthened, and the nights grew colder as the Corps of Discovery paddled westward. During the first week of October they passed many abandoned Arikara villages. George Drouillard told Meriwether that smallpox was to blame. There had originally been about thirty thousand Arikara Indians, but repeated epidemics of smallpox had reduced their number to about two thousand. Some of the gardens in the deserted villages still produced corn and squash, and the men often stopped to harvest the vegetables. In many of the abandoned Arikara huts, they found human skeletons, victims of the epidemic.

On October 8 they finally met some live Arikara. An English trader named Joseph Gravelines lived

that he would be happy to discuss making peace with the Arikara.

While Meriwether went to the Mandan village with Chief Big White, William stayed aboard the keelboat. The two co-captains had agreed that one of them should remain with the boat at all times until it was perfectly clear that there was no threat of violence.

As they walked, Chief Big White and Meriwether talked through the interpreter Joseph Gravelines. Big White explained that the five Mandan villages in the area had a combined population of about four thousand people, thirteen hundred of whom were warriors. It did not take much calculating for Meriwether to realize that the Mandan could easily overpower the Corps of Discovery if they wanted. He determined to make it clear how dangerous it would be for the tribe to earn the anger of the Great White Father of the Seventeen Nations. However, there was no need to press this message. The Mandan were eager to trade with the "white tribe" from the east and wished them no harm.

The next day Chief Big White and the Arikara chief smoked a peace pipe together, and then the Arikara chief began the journey back to his village. With these formalities out of the way, it was time for the Corps of Discovery to find a place to set up camp for the winter. Meriwether and William chose a spot on the northeast bank of the river, opposite the village.

Fort Mandan, as they called it, was built with military precision. It had two rows of cottonwood

log huts, a forge, a smokehouse, and two store-rooms all enclosed by a sturdy eighteen-foot-high log fence. The swivel gun from the bow of the keelboat was set up at the gate of the fort, and guards were on duty at all times. Although Meriwether and William were sure it was safe among the Mandan, the possibility existed that a Sioux raiding party would attack.

During the day Fort Mandan was open to visitors, and many curious Indians came to see what the white men were doing. Several traders visited, too, including a man named Toussaint Charbonneau, who immediately asked to see Meriwether.

Meriwether invited him into the hut he shared with William. Realizing the man spoke no English, he called for George Drouillard to interpret for him. The conversation began, and after a few formalities, Charbonneau explained his mission. He was a French Canadian trader who had lived with the next tribe upriver, the Hidatsa, for many years.

Unlike the Mandan Indians, the Hidatsas roamed far from home on horseback, going as far as the Rocky Mountains. Meriwether's ears pricked up at this news. He was looking for the opportunity to talk to someone who knew what lay ahead for the Corps of Discovery. But Charbonneau had some even better information. He explained that four years before, a Hidatsa raiding party had taken several Shoshone girls captive in an area known as Three Forks and returned to Hidatsa territory with them. Charbonneau had won two of the girls as a gambling prize and taken them both as

his wives. Recently he had heard the Corps of Discovery would be crossing Shoshone territory, and he asked Meriwether if he wanted to hire one of his wives as an interpreter.

Meriwether tried to look businesslike, but he was delighted at this unexpected turn of events. According to the Indians, the Shoshone had a reputation for their ability to raise and trade horses, and as far as Meriwether had been able to determine, Three Forks was the name given to the place where three rivers came together to form the Missouri. Charbonneau's wives came from the place where the corps would have to abandon their canoes and continue on over the Rocky Mountains. With a Shoshone interpreter maybe they would be able to trade goods for horses so that the Corps of Discovery could proceed across the Great Divide on horseback.

Meriwether ordered one of the privates to get William Clark. When William arrived, Meriwether told him about Charbonneau's offer. It took only a minute to make a decision. The near disaster with the Teton Sioux had shown both men how important an interpreter was, even though in this case talking to a Shoshone chief would involve several steps. Charbonneau's wife would have to tell him in Hidatsa what the chief said, and then Charbonneau would have to translate the Hidatsa into French. One of the French-speaking members of the corps would then translate the French into English. Of course, the whole order would have to be reversed when Meriwether or William wanted to address the Shoshone.

"You have a deal," Meriwether said, shaking the Frenchman's hand. "Which wife will come with you?"

"Her name is Sacagawea," Charbonneau replied, "and she is due to have a baby before spring, so she will carry it with her." He waited for Drouillard to translate what he said, and then looking at the two co-captains, he added, "But don't worry about her. Sacagawea may be only fifteen, but she is as hardy as any warrior. She won't slow you down, with or without a baby on her back."

Meriwether didn't doubt that for a moment. From what he had seen of the Indian women, they were as courageous and spirited as the men. One of the Mandan women's jobs was to paddle round "bullboats" across the Missouri River. It astonished Meriwether to see them set out when the water was so choppy that he would have instructed his own men not to go. The women were also the beasts of burden for their husbands. In fact, just the day before, Chief Big White had come to visit the fort, bringing a hundred pounds of meat with him, all of it carried in a bundle tied to his wife's back.

Later that week Charbonneau and his two wives moved inside the walls of Fort Mandan.

A week after that a Mandan warrior came to tell Meriwether that a party of Sioux and Arikara Indians had attacked five Mandan hunters. They had left one man dead, wounded two others, and stolen nine horses. Meriwether sighed when he heard the news. It had taken so little time for the Arikaras to break their promise of peace with their neighbors. For a moment he caught a glimpse of

the difficulties that lay ahead for the United States government as it tried to create peace among tribes who had been warring for generations. In fact, Meriwether hated to admit it, but the Plains Indians' entire way of life, from the manner in which they chose a chief to their dances and religious ceremonies, all seemed to be based on raids and wars. It was going to take a lot more than an army captain's urging for them to be willing to seek a permanent peace.

In early December Chief Big White informed Meriwether that a herd of buffalo had been spotted not far from the village. He invited the Corps of Discovery to join them in a buffalo hunt and offered to lend them horses for the occasion. It was just the diversion the men needed, and the meat would be a welcome supplement to their food supply.

Meriwether enjoyed every minute of the hunt and came away with new admiration for the Mandan warriors. The warriors rode bareback at hair-raising speeds, clinging to the horse with their knees as they aimed their bows and arrows. Even with guns and bullets, Meriwether's men killed nowhere near as many buffalo as the Mandan.

The women ran along behind the horses, butchering the huge animals before wolves moved in for a feast.

The next day, as Meriwether walked around Chief Big White's village, he saw a flurry of activity. It seemed as though everyone was involved in doing something with the butchered buffalo. Groups of women were twisting buffalo hair into rope while

others were pounding brains into a paste that was smeared on a hide to tan it. Warriors were busy carving bones into knives and arrowheads, and a group of young girls were tending a pot of buffalo hooves that were being boiled down and made into glue.

Both the tribe and the Corps of Discovery dined on buffalo for weeks, first as fresh meat, then in the form of jerky. However, by the end of January the corps was running out of meat, and their other food supplies were also dwindling. Something had to be done. Ironically it was not the expedition's hunters who came to the rescue but Private John Shields, their blacksmith. Up to this time Shields had been busy trading his skills for food for the corps. He had done everything from mending iron hoes and rifles to sharpening axes. But now there was nothing more to do. However, in his time with the Mandan Shields had noticed that the warriors prized a particular type of battle-axe, one that he could easily make in his blacksmith shop. He drew a pattern and set to work melting down the keelboat's iron stove and fashioning it into battle-axes. The Indians traded the finished axes for bags of corn, which fed the men through the rest of the winter.

Most of the men in the Corps of Discovery had never experienced such cold as they did that winter. Icy winds whipped across the Great Plains and piled up drifts of snow against Fort Mandan. Twice a day Meriwether recorded the outside temperature in his journal. He also recorded in his journal the birth of the youngest member of the group that



would travel west in the spring. It was the first birth he had ever helped with, and on the night of February 11, 1805, in the light of a flickering candle, he wrote, "About five o'clock this evening to one of the wives of Charbonneau was delivered a fine boy." He went on to tell how he had used an ancient Indian method of speeding up the delivery, having the mother-to-be swallow some of the crushed rattle of a rattlesnake. Whether this helped or not, Meriwether could not say, but soon afterward Sacagewea gave birth to Jean Baptiste Charbonneau, a very French name for a little brown baby with jet black eyes. Little Jean Baptiste was an instant hit with the men. Soon William had nicknamed him Pomp, a name that stuck.

Toward the end of March, large chunks of ice and debris came floating down the river along with drowned buffalo that had been caught on the ice as it broke up. The Mandan warriors jumped nimbly from one chunk of ice to the next, tying ropes to the carcasses of the buffalo and dragging them ashore. Once again there was meat for everyone to eat.

As soon as the ice chunks melted, Meriwether wanted the Corps of Discovery to be on its way. He and William had worked hard all winter, writing fuller accounts of what they had seen so far, supervising the making of six thirty-foot-long dugout canoes, and repacking the keelboat for the return trip to St. Louis.

Finally, on April 7, 1805, Meriwether Lewis stood on a bluff overlooking the river, and Scannon

stood beside him, wagging his tail and barking. On the river below were nine boats. Two canoes and the keelboat were on their way downstream to St. Louis. On board were reports and letters, a collection of sixty-eight mineral specimens Meriwether had collected and labeled, and hundreds of plant samples, including a root the Indians said cured rabies. Meriwether was sure that President Jefferson would pass the root on to Dr. Rush. Stuffed animals and their bones were also aboard the boats. Meriwether had even included some live animals—four magpies, a prairie dog, and a grouse hen. He smiled as he thought of Jefferson trying to corral the prairie dog!

Corporal Richard Warfington had been put in charge of the group going back. With them was Joseph Gravelines, who would serve as interpreter. Meriwether hoped that Corporal Warfington would be able to safely guide the keelboat past the hostile Sioux. It was a gamble, but Warfington had been given instructions to fight to the death if necessary. At all costs, the precious cargo of the keelboat and canoes had to get through.

Traveling upstream in the opposite direction from the keelboat were the six newly hewn dugout canoes and the two pirogues that Meriwether would catch up to. On board the canoes and pirogues were William Clark, three sergeants, twenty-four privates, two French interpreters, an Indian girl and her seven-week-old baby, and a black slave. It was more than the fifteen men Meriwether and Jefferson had envisaged going on the trip. But after

his men leaping off a twenty-foot-high cliff into the water below. To his horror, a huge grizzly bear plunged off the cliff after them. Hitting the water, it looked around and swam toward the men.

Another man appeared on the bank and fired his rifle at the bear. The creature flailed in the water for a moment and then was still.

Meriwether ordered the pirogue to come alongside the bear, and when he was convinced the bear was dead, one of the men tied a rope around its leg and they dragged it ashore.

Once the bear was on the beach, Meriwether learned what had happened. The six men in the rear canoes had spotted the bear and come up with a plan to kill it. They would sneak up on the bear, and four of them would fire at it while the other two men kept their rifles in reserve in case anything went wrong. Their plan did go wrong. All four shots hit the bear, but instead of dying, the bear became enraged and attacked the men. Two of them escaped in one of the canoes, and the other four found refuge in some willow trees. From there they fired at the bear several more times, but the bear managed to knock two of the men out of the tree, and the men fled for their lives, throwing away their unloaded guns and powder pouches. They then threw themselves over the cliff just as Meriwether rounded the bend in the river and saw what happened next.

Meriwether measured the bear. Its feet were nine inches across and thirteen inches in length, with claws that were seven inches long. The claws

could shred a man to pieces in seconds. Meriwether estimated the animal weighed about six hundred pounds, though he had no scale large enough to weigh it. When the bear was butchered, they discovered that eight bullets had hit it. When it plunged over the cliff, its shoulder had already been shattered by one bullet, and four had passed right through its lungs.

Meriwether quickly revised his conclusion about the grizzly bears. He would rather meet two armed Indians than another adult grizzly. He ordered the men to leave the bears alone unless they were being a nuisance or were set to attack. The men nodded their heads in instant agreement.

The day was not yet over, however, and more drama awaited them. Meriwether and William were walking along the edge of the river at about 4 P.M. when some stiff gusts of wind blew up. The white pirogue was on the far side of the river, where the men were using a small square sail to power the boat upstream. One of the powerful gusts of wind caught the pirogue and turned it sideways to the wind, and it began to list precariously. Charbonneau, who was steering the boat, panicked, fearing it would capsize and throw him into the water, where he would drown. Instead of pulling the tiller and heading the pirogue into the wind where it would right itself, he began to wail and cry out to God for mercy. All the while the pirogue was filling with water.

Cruzatte called to Charbonneau to grab the tiller and turn the boat, but Charbonneau would

not listen, at least not until Cruzatte threatened to shoot him if he didn't do as asked. Finally Charbonneau grabbed the tiller, and slowly the boat turned into the wind and righted itself, not, however, before it had filled with water to within one inch of the gunwales. By now important reports Meriwether had written and specimens he had collected were bobbing in the water. Onshore Meriwether was beside himself. He could scarcely believe what he was seeing. His life's work was floating away!

While the men furiously began bailing the pirogue to stop it from completely sinking, Sacagawea sprang into action. She began crawling about the half-sunken boat, reaching out and scooping up the items that had been washed overboard. All the while she carefully made sure Pomp's head stayed clear of the water so he did not drown and make the disaster worse than it already was.

Finally the pirogue was brought to shore, and although everything in it was wet, including Meriwether's navigational equipment, thanks to Sacagawea's quick thinking, nothing important was lost. Relieved, that night Meriwether handed out an extra ration of whiskey to the men, even Charbonneau, whom William described as "perhaps the most timid waterman in the world."

Meriwether was so impressed by the Indian girl's quick thinking in saving the items that had washed overboard that he named the next river they passed Sacagawea River in her honor.

Although the Hidatsa warriors had told Meriwether about the upper reaches of the Missouri River, Meriwether was taken by surprise when on June 2, two days after entering an area where the river flowed between high white cliffs, the expedition came to a fork. One branch of the river flowed northwest and the other southwest. Only one branch was the Missouri River, which would take them to the foot of the Rocky Mountains. But which one? The Hidatsa warriors who had told Meriwether about the upper reaches of the Missouri River had not told him about the fork because they had taken a shortcut overland and so were unaware that the fork even existed. But now the Corps of Discovery was at the fork, and Meriwether and William were dumbfounded as to which branch they should follow. To pick the wrong fork could mean the end of the expedition.

The group set up camp beside the river for the night while the two co-captains discussed what to do. Meriwether took readings from the stars, and William recorded them by candlelight. They hoped that plotting their position would give them some guidance as to which fork to choose, but it didn't. As soon as the sun came up, Meriwether measured the width of the right-hand fork, which seemed to flow in a more direct line from the west. The fork was two hundred yards wide, and the water was deep, tepid, slow moving and thick with sediment. It also had a muddy bottom.

In contrast, the left fork was 372 yards wide and flowed from the southwest. It was shallower

design and getting it built and the energy used to lug the frame mile after mile upriver. It had all been for nothing. Experiment was not fit to paddle, and without the proper tar it never would be.

Meriwether was so distraught he hardly noticed when William took charge and ordered the men to find cottonwood trees large enough to hew into more dugout canoes. Five days passed before the new canoes were loaded and ready to go. Precious time had been lost, and Meriwether became increasingly worried about the trek over the mountains. According to the Hidatsa Indians, it would take only half a day to traverse the mountains, but after his experience with the falls, Meriwether doubted that estimate. And without horses to help carry their supplies, it might be impossible to cross them at all. The only way to get horses now was to find the Shoshone Indians.

As they traveled on upriver above the falls, the scenery began to change. Gone were the wide-open plains and the vast herds of buffalo, replaced by jagged rocks and glimpses of fleet-footed mountain sheep. It became more difficult for the hunters to catch their daily quota of game, especially since Meriwether was anxious about every shot they fired. What if a Shoshone scout heard a shot and thought it was an enemy invasion?

Hard days of pushing, pulling, poling, and paddling the canoes melded together as the men struggled upriver through valleys that sweltered in the summer heat. The men felt lucky when they covered eighteen miles in a day.

By the time they reached Three Forks on July 27, the men were almost too exhausted to go on. But as exhausted as he was, Meriwether was relieved. It meant they were getting very close to Shoshone territory.

Thinking that the three rivers that came together at that spot deserved grand names, Meriwether named them the Gallitin, Madison, and Jefferson Rivers, in honor of the secretary of the treasury, the secretary of state, and, of course, the president himself.

The Corps of Discovery camped at Three Forks for two days. The men rested, hunted, fished, and mended their tattered buckskin clothes. Meriwether also fixed the latitude and longitude of the point where the forks met. With that task accomplished, the expedition continued up the Jefferson River, which was the fork that branched off to the right.

Two days later Sacagawea cheered everyone up with her announcement that she recognized a rocky outcrop. She told them it was right at the spot where Hidatsa warriors had kidnapped her. They were now in Shoshone territory. From then on, each day a small group of men marched on ahead of the canoes. Their job was to look for any sign of Indians. However, fewer and fewer men were up to the rigors of such a march. William had a tumor on his ankle that made it impossible for him to walk more than a few feet, and Toussaint Charbonneau, Patrick Gass, and five of the privates spent hours lying in the canoes with ailments ranging from

opening up, whether the president wanted it to or not. Groups of people vied for land and influence. Indians were coming to town in increasing numbers looking for work or justice or to cause mayhem. John Jacob Astor and his newly formed American Fur Company sent trappers and traders upriver into the heart of Louisiana Territory, only to end up in conflict with the Indians and British fur traders.

The only bright spot in the situation was that William was at Meriwether's side again. By now he had married Julia Hancock, and they soon had a baby boy, whom they named Meriwether Lewis Clark.

Meriwether did the best he could under the circumstances, but it was impossible to keep the Indian tribes from fighting one another, the British out of Louisiana, and pioneers from squatting on Indian land. By July 1809, the situation was reaching a crisis point. Late in 1807 Nathaniel Pryor had led an expedition up the Missouri River to return Chief Big White and his entourage to Mandan territory. Along the way, Arikara Indians had attacked the convoy, killing three soldiers and wounding eight others, including George Shannon, who had to have his leg amputated. The group fled back downriver to St. Louis, where Chief Big White still waited to be returned to his people.

Also, the Great Osage Indians were at war with the Little Osage Indians, which made passage up the Osage River impossible. And of course, thanks to the increased presence of traders, the Indians now had more guns than ever before.

After carefully thinking over Chief Big White's plight, Meriwether signed a contract with the St. Louis Missouri River Fur Company to escort the chief and his group home at last. The deal cost the government seven thousand dollars, in part because the contract called for the fur company to provide 125 militiamen deemed necessary to guarantee safe passage home for Chief Big White. Once they had delivered the chief to his village, Meriwether gave the traders permission to hunt and trade all the way up the Yellowstone River. He also promised not to issue licenses to anyone else, so that the St. Louis Missouri River Fur Company would have the trading rights to itself. He sent a request to Washington to cover the costs of the mission, along with a bill for five hundred dollars, money Meriwether had used to buy gifts for the Indians the group met along the way.

Meriwether's timing could not have been worse. Although it was normal for the federal government to reimburse him for costs, this time it balked. A war between the United States and the British was brewing, and all the military resources of the country were focused on the Atlantic Ocean. The United States also had a new president, James Madison, who did not appreciate the importance of getting the Mandan chief home at any cost.

In August Meriwether received devastating news. It came in the form of a letter from the new secretary of war, and it coldly informed him that the government would not be reimbursing him the five hundred dollars for Indian gifts and that it was looking into whether it should pay the seven

thousand dollars as well. Since this money had already been spent, this left Meriwether to pay the huge bill himself.

Meriwether knew there was only one thing to do. He had to go to Washington and explain the situation to the new administration. On September 3, 1809, Meriwether set out for Washington, accompanied by his servant John Pernier, a freed black slave. Along the way Major James Neelly and his servant joined him on the journey. They rode horses eastward along the Natchez Trace. On Monday, October 9, they crossed the Tennessee River and set up camp. During the night two of the horses strayed, and James Neelly went in search of them. Meanwhile, Meriwether, Pernier, and Neelly's servant rode on, trusting that the major would catch up to them, with or without the two missing horses.

That night Meriwether did not have to camp because they came across a log cabin inn owned by the Grinder family. Located seventy-two miles southwest of Nashville, the inn was a simple affair: The two servants slept in the barn, while Meriwether was given an outside room. Major Neelly did not show up, and Meriwether went to bed around eleven o'clock.

Three hours later, two shots rang out, and Meriwether lay dying. He called out for help, but no one came to his aid as his life drained from him. Meriwether was thirty-five years old when he died.

At noon the following day, the body of Meriwether Lewis was hastily laid to rest in a shallow

grave a few yards from Grinder's Inn. No government official visited the scene, and no investigation into his death was ordered. Mrs. Grinder convinced anyone who asked that Meriwether had committed suicide. But had he? The answer to the question remains uncertain to this day. At first everyone believed that Meriwether had killed himself, but as time went on, some people began to have doubts. Mrs. Grinder kept changing her story of what happened, and some of the items Meriwether had with him at the time he died were never found. Ironically, the man who had sought to solve one of the United States' great mysteries—what lay in the unknown land beyond the young nation's western boundary—himself left us a great mystery in his death.

---

APPENDIX I

JEFFERSON'S INSTRUCTIONS TO LEWIS

---

**T**o Meriwether Lewis, esquire, Captain of the 1st regiment of infantry of the United States of America: Your situation as Secretary of the President of the United States has made you acquainted with the objects of my confidential message of Jan. 18, 1803, to the legislature. you have seen the act they passed, which, tho' expressed in general terms, was meant to sanction those objects, and you are appointed to carry them into execution.

Instruments for ascertaining by celestial observations the geography of the country thro' which you will pass, have already been provided. light articles for barter, & presents among the Indians, arms for your attendants, say for from 10 to 12 men, boats, tents, & other travelling apparatus, with ammunition, medicine, surgical instruments & provisions you will have prepared with such aids as the Secretary at War can yield in his department; & from him also you will recieve authority to engage among our troops, by voluntary agreement, the number of attendants above mentioned, over whom you, as their commanding officer are invested with all the powers the laws give in such a case.

As your movements while within the limits of the U. S. will be better directed by occasional communications, adapted to circumstances as they arise, they will not be noticed here. what follows will respect your proceedings after your departure from the U. S.

Your mission has been communicated to the Ministers here from France, Spain & Great Britain, and through them to their governments: and such assurances given them as to it's objects as we trust will satisfy them. the country of Louisiana having been ceded by Spain to France, the passport you have from the Minister of France,

the representative of the present sovereign of the country, will be a protection with all it's subjects: And that from the Minister of England will entitle you to the friendly aid of any traders of that allegiance with whom you may happen to meet.

The object of your mission is to explore the Missouri river, & such principal stream of it, as, by it's course & communication with the waters of the Pacific Ocean, may offer the most direct & practicable water communication across this continent, for the purposes of commerce.

Beginning at the mouth of the Missouri, you will take observations of latitude & longitude, at all remarkable points on the river, & especially at the mouths of rivers, at rapids, at islands & other places & objects distinguished by such natural marks & characters of a durable kind, as that they may with certainty be recognized hereafter. the courses of the river between these points of observation may be supplied by the compass, the log-line & by time, corrected by the observations themselves. the variations of the compass too, in different places, should be noticed.

The interesting points of portage between the heads of the Missouri & the water offering the best communication with the Pacific Ocean should also be fixed by observation, & the course of that water to the ocean, in the same manner as that of the Missouri.

Your observations are to be taken with great pains & accuracy, to be entered distinctly, & intelligibly for others as well as yourself, to comprehend all the elements necessary, with the aid of the usual tables, to fix the latitude and longitude of the places at which they were taken, & are to be rendered to the war office, for the purpose of having the calculations made concurrently by proper persons within the U. S. several copies of these, as well as your other notes, should be made at leisure times & put into the care of the most trustworthy of your attendants, to guard by multiplying them, against the accidental losses to which they will be exposed. a further guard would be that one of these copies be written on the paper of the birch, as less liable to injury from damp than common paper.

The commerce which may be carried on with the people inhabiting the line you will pursue, renders a knolege of these people important. you will therefore endeavor to make yourself acquainted, as far as a diligent pursuit of your journey shall admit,

with the names of the nations & their numbers;  
 the extent & limits of their possessions;  
 their relations with other tribes or nations;  
 their language, traditions, monuments;  
 their ordinary occupations in agriculture, fishing, hunting, war, arts, & the implements for these;  
 their food, clothing, & domestic accomodations;  
 the diseases prevalent among them, & the remedies they use;  
 moral & physical circumstances which distinguish them from the tribes we know;  
 peculiarities in their laws, customs & dispositions;  
 and articles of commerce they may need or furnish, & to what extent.

And considering the interest which every nation has in extending & strengthening the authority of reason & justice among the people around them, it will be useful to acquire what knolege you can of the state of morality, religion & information among them, as it may better enable those who endeavor to civilize & instruct them, to adapt their measures to the existing notions & practises of those on whom they are to operate.

Other object worthy of notice will be  
 the soil & face of the country, it's growth & vegetable productions; especially those not of the U. S.  
 the animals of the country generally, & especially those not known in the U. S.  
 the remains and accounts of any which may deemed rare or extinct;  
 the mineral productions of every kind; but more particularly metals, limestone, pit coal & salpêtre; salines & mineral waters, noting the temperature of the last, & such circumstances as may indicate their character.  
 Volcanic appearances.  
 climate as characterized by the thermometer, by the proportion of rainy, cloudy & clear days, by lightening, hail, snow, ice, by the access & recess of frost, by the



winds prevailing at different seasons, the dates at which particular plants put forth or lose their flowers, or leaf, times of appearance of particular birds, reptiles or insects.

Altho' your route will be along the channel of the Missouri, yet you will endeavor to inform yourself, by inquiry, of the character & extent of the country watered by it's branches, & especially on it's southern side. the North river or Rio Bravo which runs into the gulph of Mexico, and the North river, or Rio Colorado, which runs into the gulph of California, are understood to be the principal streams heading opposite to the waters of the Missouri, and running Southwardly. whether the dividing grounds between the Missouri & them are mountains or flatlands, what are their distance from the Missouri, the character of the intermediate country, & the people inhabiting it, are worthy of particular enquiry. The Northern waters of the Missouri are less to be enquired after, because they have been ascertained to a considerable degree, and are still in a course of ascertainment by English traders & travellers. but if you can learn anything certain of the most Northern source of the Missisipi, & of it's position relative to the lake of the woods, it will be interesting to us. some account too of the path of the Canadian traders from the Missisipi, at the mouth of the Ouisconsin river, to where it strikes the Missouri and of the soil & rivers in it's course, is desirable.

In all your intercourse with the natives treat them in the most friendly & conciliatory manner which their own conduct will admit; allay all jealousies as to the object of your journey, satisfy them of it's innocence, make them acquainted with the position, extent, character, peaceable & commercial dispositions of the U. S. of our wish to be neighborly, friendly & useful to them, & of our dispositions to a commercial intercourse with them; confer with them on the points most convenient as mutual emporiums, & the articles of most desirable interchange for them & us. if a few of their influential chiefs, within practicable distance, wish to visit us, arrange such a visit with them, and furnish them with authority to call on our officers, on their entering the U. S. to have them conveyed to this place at public expence. if any of them should wish to have some of their young people brought up with us, & taught such arts as may be useful to

them, we will receive, instruct & take care of them. such a mission, whether of influential chiefs, or of young people, would give some security to your own party. carry with you some matter of the kind-pox, inform those of them with whom you may be of it' efficacy as a preservative from the small-pox; and instruct & encourage them in the use of it. this may be especially done wherever you winter.

As it is impossible for us to foresee in what manner you will be recieved by those people, whether with hospitality or hostility, so is it impossible to prescribe the exact degree of perseverance with which you are to pursue your journey. we value too much the lives of citizens to offer them to probably destruction. your numbers will be sufficient to secure you against the unauthorised opposition of individuals, or of small parties: but if a superior force, authorised or not authorised, by a nation, should be arrayed against your further passage, & inflexibly determined to arrest it, you must decline it's further pursuit, and return. in the loss of yourselves, we should lose also the information you will have acquired. by returning safely with that, you may enable us to renew the essay with better calculated means. to your own discretion therefore must be left the degree of danger you may risk, & the point at which you should decline, only saying we wish you to err on the side of your safety, & bring back your party safe, even if it be with less information.

As far up the Missouri as the white settlements extend, an intercourse will probably be found to exist between them and the Spanish posts at St. Louis, opposite Cahokia, or Ste. Genevieve opposite Kaskaskia. from still farther up the river, the traders may furnish a conveyance for letters. beyond that you may perhaps be able to engage Indians to bring letters for the government to Cahokia or Kaskaskia, on promising that they shall there receive such special compensation as you shall have stipulated with them. avail yourself of these means to communicate to us, at seasonable intervals, a copy of your journal, notes & observations of every kind, putting into cypher whatever might do injury if betrayed.

Should you reach the Pacific ocean [~~One full line scratched out, indecipherable. — Thwaites.~~] inform yourself of the circumstances which may decide whether the furs of those parts may not be collected as advantageously at the head of the Missouri (convenient as is supposed to the waters of the Colorado & Oregon or Columbia) as at Nootka sound or any other point of that coast; & that trade be

consequently conducted through the Missouri & U. S. more beneficially than by the circumnavigation now practised.

On your arrival on that coast endeavor to learn if there be any port within your reach frequented by the sea-vessels of any nation, and to send two of your trusty people back by sea, in such way as shall appear practicable, with a copy of your notes. and should you be of opinion that the return of your party by the way they went will be eminently dangerous, then ship the whole, & return by sea by way of Cape Horn or the Cape of good Hope, as you shall be able. as you will be without money, clothes or provisions, you must endeavor to use the credit of the U. S. to obtain them; for which purpose open letters of credit shall be furnished you authorising you to draw on the Executive of the U. S. or any of its officers in any part of the world, on which drafts can be disposed of, and to apply with our recommendations to the Consuls, agents, merchants, or citizens of any nation with which we have intercourse, assuring them in our name that any aids they may furnish you, shall honorably repaid, and on demand. Our consuls Thomas Howes at Batavia in Java, William Buchanan on the isles of France and Bourbon, & John Elmslie at the Cape of good hope will be able to supply your necessities by draughts on us.

Should you find it safe to return by the way you go, after sending two of your party round by sea, or with your whole party, if no conveyance by sea can be found, do so; making such observations on your return as may serve to supply, correct or confirm those made on your outward journey.

In re-entering the U. S. and reaching a place of safety, discharge any of your attendants who may desire & deserve it, procuring for them immediate payment of all arrears of pay & cloathing which may have incurred since their departure; & assure them that they shall be recommended to the liberality of the legislature for the grant of a soldier's portion of land each, as proposed in my message to Congress & repair yourself with your papers to the seat of government.

To provide, on the accident of your death, against anarchy, dispersion & the consequent danger to your party, and total failure of the enterprise, you are hereby authorised, by any instrument signed & written in your hand, to name the person among them who shall succeed to the command on your decease, & by like instruments to

change the nomination from time to time, as further experience of the characters accompanying you shall point out superior fitness; and all the powers & authorities given to yourself are, in the event of your death, transferred to & vested in the successor so named, with further power to him, & his successors in like manner to name each his successor, who, on the death of his predecessor, shall be invested with all the powers & authorities given to yourself.

Given under my hand at the city of Washington, this 20th day of June 1803

Th. Jefferson  
Pr. U S. of America

late in dobing [daubing: chinking spaces between logs with clay] their huts, Some horses Sent down to Stay in the woods near the fort, to prevent the Ossniboins Steeling them.

18TH NOV. SUNDAY 1804 —

the Black Cat, came to see us, he made great inquiries respecting our fashions, he also Stated the Situation of their nation, he mentioned that a Council had been held the day before and it was thought advisable to put up with the resent insults of the Ossiniboins & Christinoes [Crees] untill they were convinced that what had been told them by us, Mr. Evins<sup>10</sup> had deceived them & we might also, he promised to return & furnish them with guns & amunition, we advised them to remain at peace & that they might depend upon Getting Supplies through the Channel of the Missourie, but it required time to put the trade in opperation. The Ossiniboins &c. have the trade of those [these] nations in their power and treat them badly, as the Soux does the *Ricarees*, and they cannot resent, for fear of loseing their trade.

[Biddle]

NOVEMBER 20TH.

We this day moved into our huts which are now completed. This place which we call Fort Mandan, is situated in a point of low ground, on the north side of the Missouri, covered with tall and heavy cottonwood. The works consist of two rows of huts or sheds, forming an angle where they joined each other; each row containing four rooms, of 14 feet square and 7 feet high, with plank cieling, and the roof slanting so as to form a loft above the rooms, the highest part of which is 18 feet from the ground: the backs of the huts formed a wall of that height, and opposite the angle the place of the wall was supplied by picketing: in the area were two rooms for stores and provisions. The latitude by observation is 47° 21' 47", and the computed distance from the mouth of the Missouri is sixteen hundred miles.

<sup>10</sup> John Evans. Note the concern of Lewis and Clark to get the trade of the villages into American hands. The Indians are saying that they hope they can depend on the Americans' promise to supply them with plenty of goods but they had believed Evans when he made the same promise and he did not keep it.

In the course of the day several Indians came down to partake of our fresh meat; among the rest, three chiefs of the second Mandan village. They inform us that the Sioux on the Missouri about the Chayenne river, threaten to attack them this winter; that these Sioux are much irritated at the Ricaras for having made peace through our means with the Mandans, and have lately ill-treated three Ricaras who carried the pipe of peace to them, by beating them and taking away their horses. We gave them assurances that we would protect them from all their enemies.

[Clark]

22ND OF NOVEMBER THURSDAY 1804 —

I was allarmed about 10 oClock by the Sentinal, who informed that an Indian was about to kill his wife in the interpersers fire about 60 yards below the works, I went down and Spoke to the fellow about the rash act which he was like to commit and forbid any act of the kind near the fort. Some misunderstanding took place between this man & his fife [wife] about 8 days ago, and she came to this place, & continued with the Squars of the interpersers, (*he might lawfully have killed her for running away*) 2 days ago She returned to the vill'ge. in the evening of the Same day She came to the interpersers fire appearently much beat, & Stabed in 3 places. We Deredcted that no man of this party have any intercourse with this woman under the penalty of Punishment. he the Husband observed that one of our Serjeants Slept with his wife & if he wanted her he would give her to him, We deredcted the Serjeant [Ordway] to give the man Some articles, at which time I told the Indian that I believed not one man of the party had touched his wife except the one he had given the use of her for a nite, in his own bed, no man of the party Should touch his squar, or the wife of any Indian, nor did I believe they touch a woman if they knew her to be the wife of another man, and advised him to take his squar home and live hapily together in future,

The Grand Chief continued (*with us*) all day, a warm Day fair afternoon many Indian aneckdotes our Chief & his family stay all night.

appears in great quantities along the banks of this river, which are in many places so thickly covered with it that they appear perfectly white. perhaps it has been from this white appearance of it's banks that the river has derived it's name. this river is said to be navigable nearly to it's source, which is at no great distance from the Saskashawan, and I think from it's size the direction wich it seems to take, and the latitude of it's mouth, that there is very good ground to believe that it extends as far North as latitude  $50^{\circ}$  this stream passes through an open country generally.

Coal or carbonated wood pumice stone lava and other mineral apearances still continue. the coal appears to be of better quality; I exposed a specimen of it to the fire and found that it birnt tolerably well, it afforded but little flame or smoke, but produced a hot and lasting fire. I asscended to the top of the cutt bluff this morning, from whence I had a most delightfull view of the country, the whole of which except the vally formed by the Missouri is void of timber or underbrush, exposing to the first glance of the spectator immense herds of Buffaloe, Elk, deer, & Antelopes feeding in one common and boundless pasture. we saw a number of bever feeding on the bark of the trees along the verge of the river, several of which we shot, found them large and fat. walking on shore this evening I met with a buffaloe calf which attatched itself to me and continued to follow close at my heels untill I embarked and left it. it appeared allarmed at my dog which was probably the cause of it's so readily attatching itself to me. Capt Clark informed me that he saw a large drove of buffaloe pursued by wolves today, that they at length caught a calf which was unable to keep up with the herd. the cows only defend their young so long as they are able to keep up with the herd, and seldom return any distance in surch of them.

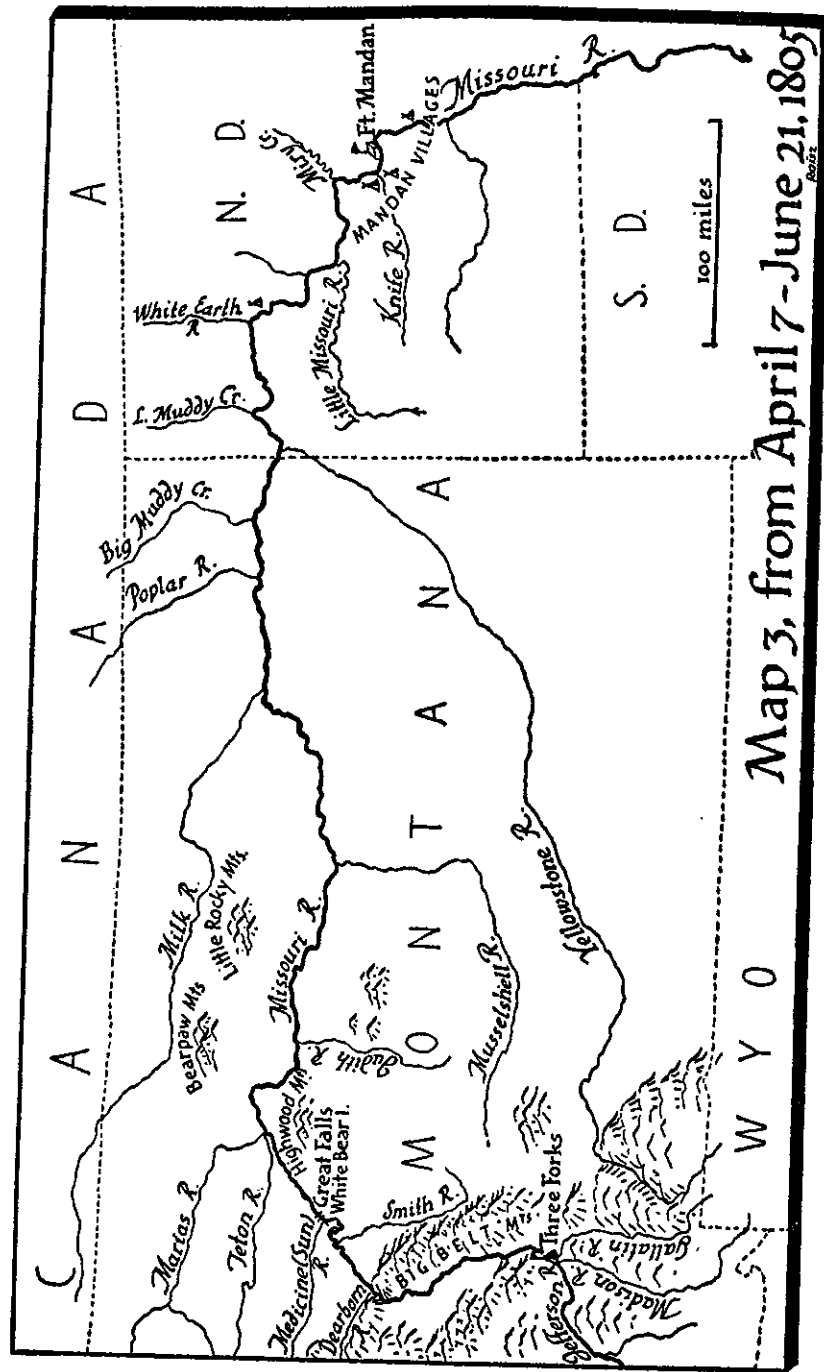
THURSDAY APRIL 25TH 1805.

the water friezed on the oars this morning as the men rowed. about 10 oclock A.M. the wind began to blow so violently that we were obliged to lye too. my dog had been absent during the last night, and I was fearfull we had lost him altogether, however, much to my satisfaction he joined us at 8 oclock this morning. Knowing that the river was crooked, from the report of the hunters

who were out yesterday, and beleiving that we were at no very great distance from the Yellow stone River; I determind, in order as mush as possible to avoid detention, to proceed by land with a few men to the entrance of that river and make the necessary observations to determine its position; accordingly I set out at 11 Ock. on the Lard. side, accompanied by four men. when we had proceeded about four miles, I ascended the hills from whence I had a most pleasing view of the country, particularly of the wide and fertile vallies formed by the missouri and the yellowstone rivers, which occasionally unmasked by the wood on their borders disclose their meanderings for many miles in their passage through these delightfull tracts of country. I determined to encamp on the bank of the Yellow stone river which made it's appearance about 2 miles South of me. the whol face of the country was covered with herds of Buffaloe, Elk & Antelopes; deer are also abundant, but keep themselves more concealed in the woodland. the buffaloe Elk and Antelope are so gentle that we pass near them while feeding, without appearing to excite any alarm among them; and when we attract their attention, they frequently approach us more nearly to discover what we are, and in some instances pursue us a considerable distance apparently with that view. we encamped on the bank of the yellow stone river, 2 miles South of it's confluence with the Missouri.

FRIDAY APRIL 26TH 1805.

This morning I dispatched Joseph Fields up the yellowstone river with orders to examine it as far as he could conveniently and return the same evening; while I proceeded down the river with one man in order to take a view of the confluence of this great river with the Missouri, which we found to be two miles distant on a direct line N.W. from our encampment. the bottom land on the lower side of the yellowstone river near it's mouth, for about one mile in width appears to be subject to inundation; while that on the opposite side of the Missouri and the point formed by the junction of these rivers is of the common elivation, say from twelve to 18 feet above the level of the water, and of course not liable to be overflown except in extreem high water, which dose not appear to be very frequent. there is more timber in the neighbourhood of the junction of these rivers, and on the Missouri as far below



Map 3, from April 7 - June 21, 1805

as the White-earth river, than there is on any part of the Missouri above the entrance of the Chyenne river to this place.

about 12 O[c]lock I heard the discharge of several guns at the junction of the rivers, which announced to me the arrival of the pa[r]ty with Capt Clark; I afterwards learnt that they had fired on some buffaloe which they met with at that place, and of which they killed a cow and several Calves; the latter are now fine veal. after I had completed my observations in the evening I walked down and joined the party at their encampment on the point of land formed by the junction of the rivers; found them all in good health, and much pleased at having arrived at this long wished for spot, and in order to add in some measure to the general pleasure which seemed to pervade our little community, we ordered a dram to be issued to each person; this soon produced the fiddle, and they spent the evening with much hilarity, singing & dancing, and seemed as perfectly to forget their past toils, as they appeared regardless of those to come.

Capt Clark measured these rivers just above their confluence; found the bed of the Missouri 520 yards wide, the water occupying 330. it's channel deep. the yellowstone river including it's sandbar, 858 yds. of which, the water occupied 297 yards; the deepest part 12 feet; it was falling at this time & appeared to be nearly at it's summer tide. the Indians inform that the yellowstone river is navigable for perogues and canoes nearly to it's source in the Rocky Mountains, and that in it's course near these mountains it passes within less than half a day's march of a navigable part of the Missouri. it's extream sources are adjacent to those of the Missouri, river platte, and I think probably with some of the South branch of the Columbia river.<sup>8</sup> the water of this river is turbid, tho' dose not possess as much sediment as that of the Missouri.

<sup>8</sup> This information about the headwaters is, of course, erroneous. The first known use of the names Rochejaune or Yellowstone was by James Mackay in 1795. In this same summer, 1805, the North West Company made its first move to open the Far Western trade by sending François Antoine Larocque overland to explore the Yellowstone. He left the Mandan villages in June, traveling with a party of Crows, and reached the Yellowstone near the mouth of the Big Horn. He then traveled slowly down the valley of the Yellowstone, reaching the mouth, where Lewis and Clark now are, at the end of September. It was a fruitless exploration but Larocque did establish (by reliable hearsay) a fact which Clark missed now and on his descent in 1806, the existence of the falls of the Yellowstone.

[Clark]

MAY 2ND THURSDAY 1805

The wind blew verry hard all the last night, this morning about sunrise began to Snow, (The Thermomtr. at 28. abov 0) and continued untill about 10 oClock, at which time it seased, the wind continued hard untill about 2 P.M. the Snow which fell to day was about 1 In deep, a verry extraodernarey climate, to behold the trees Green & flowers spred on the plain, & Snow an inch deep. we Set out about 3 oClock and proceeded on about five ½ miles and encamped on the Std Side, the evening verry cold, Ice freeing to the Ores. I shot a large beaver & Drewyer three in walking on the bank, the flesh of those animals the party is fond of eating &c.

MAY 3RD FRIDAY 1805

we Set out reather later this morning than useal owing to weather being verry cold, a frost last night and the Thermt. stood this morning at 26 above 0. which is 6 degrees blow freeseing. the ice that was on the Kettle left near the fire last night was ¼ of an inch thick. The snow is all or nearly all off the low bottoms, the Hills are entireley covered; three of our party found in the back of a bottom 3 pieces of scarlet [cloth] one brace<sup>3</sup> in each, which had been left as a sacrifice near one of their swet houses, on the L.S. we passed to day a curious collection of bushes tied up in the shape of *faccene* about 10 feet diamuter, which must have been left also by the natives as an offering to their medison which they [are] convinced protected or gave them relief near the place, the wind continued to blow hard from the West, altho' not sufficently so to detain us. Great numbers of Buffalow, Elk, Deer, antilope, beaver, Procupins, & water fowls seen to day, such as, Geese, ducks of dift. kinds, & a few Swan.

MAY 4TH SATTURDAY 1805

The rudder Irons of our large Perogue broke off last night, the replacings of which detained us this morning untill 9 oClock at

<sup>3</sup> A rough measurement of length, from fingertip to fingertip with the arms stretched out.

which time we set out The cuntry on each side of the Missouri is a rich high and butifull the bottoms are extencive with a great deal of timber on them all the fore part of this day the wood land bordered the river on both Sides, in the after part of butifull assending plain on the Std Side we encamped on the Std. Side a little above. Saw great numbers of anamals of different kinds on the banks, we have one man Sick. The river has been falling for several days passed; it now begins to rise a little, the rate of rise & fall is from one to 3 inches in 24 hours

5TH OF MAY SUNDAY 1805

We set out verry early and had not proceeded far before the rudder Irons of one of the Perogus broke which detained us a short time Capt Lewis walked on shore this morning and killed a Deer, after brackfast I walked on shore Saw great numbers of Buffalow & Elk Saw also a Den of young wolves, and a number of Grown Wolves in every direction, The Countrey on both sides is as yesterday handsom & fertile. The river rising & current Strong & in the evening we saw a Brown or Grisley beare on a sand beech, I went out with one man Geo Drewyer & Killed the bear, which was verry large and a turrible looking animal, which we found verry hard to kill we Shot ten Balls into him before we killed him, & 5 of those Balls through his lights This animal is the largest of the carnivorous kind I ever saw

[Lewis]

SUNDAY MAY 5TH 1805

it was a most tremendous looking anamal, and extreemly hard to kill notwithstanding he had five balls through his lungs and five others in various parts he swam more than half the distance across the river to a sandbar, & it was at least twenty minutes before he died; he did not attempt to attack, but fled and made the most tremendous roaring from the moment he was shot. We had no means of weighing this monster; Capt. Clark thought he would weigh 500 lbs. for my own part I think the estimate too small by 100 lbs. he measured 8. Feet 7½ Inches from the nose to the extremety of the hind feet, 5 F. 10½ Ins. arround the breast,

but of which in the s[e]quel we get a moderate portion; the mustle lying underneath the shoulder blade next to the back, and fillets are next saught, these are needed up very fine with a good portion of kidney suit; to this composition is then added a just proportion of pepper and salt and a small quantity of flour; thus far advanced, our skilfull opporater C—o seizes his recepticle, which has never once touched the water, for that would intirely distroy the regular order of the whole procedure; you will not forget that the side you now see is that covered with a good coat of fat provided the anamal be in good order; the operator sceizes the recepticle I say, and tying it fast at one end turns it inward and begins now with repeated evolutions of the hand and arm, and a brisk motion of the finger and thumb to put in what he says is *bon pour manger*; thus by stuffing and compressing he soon distends the recepticle to the utmost limmits of it's power of expansion, and in the course of it's longtudinal progress it drives from the other end of the recepticle a much larger portion of the [blank space in MS.] than was previously discharged by the finger and thumb of the left hand in a former part of the operation; thus when the sides of the recepticle are skilfully exchanged the outer for the iner, and all is compleatly filled with something good to eat, it is tyed at the other end, but not any cut off, for that would make the pattern too scant; it is then baptised in the missouri with two dips and a flirt, and bobbed into the kettle; from whence, after it be well boiled it is taken and fryed with bears oil untill it becomes brown, when it is ready to esswage the pangs of a keen appetite or such as travelers in the wilderness are seldom at a loss for.

TUESDAY MAY 14TH 1805.

one of the party wounded a brown [grizzly] bear very badly, but being alone did not think proper to pursue him. In the evening the men in two of the rear canoes discovered a large brown bear lying in the open grounds about 300 paces from the river, and six of them went out to attack him, all good hunters; they took the advantage of a small eminence which concealed them and got within 40 paces of him unperceived, two of them reserved their fires as had been previously conscerted, the four others

fired nearly at the same time and put each his bullet through him, two of the balls passed through the bulk of both lobes of his lungs, in an instant this monster ran at them with open mouth, the two who had reserved their fir[e]s discharged their pieces at him as he came towards them, boath of them struck him, one only slightly and the other fortunately broke his shoulder, this however only retarded his motion for a moment only, the men unable to reload their guns took to flight, the bear pursued and had very nearly overtaken them before they reached the river; two of the party betook themselves to a canoe and the others seperated an[d] concealed themselves among the willows, reloaded their pieces, each discharged his piece at him as they had an opportunity they struck him several times again but the guns served only to direct the bear to them, in this manner he pursued two of them seperately so close that they were obliged to throw aside their guns and pouches and throw themselves into the river altho' the bank was nearly twenty feet perpendicular; so enraged was this anamal that he plunged into the river only a few feet behind the second man he had compelled [to] take refuge in the water, when one of those who still remained on shore shot him through the head and finally killed him; they then took him on shore and butch[er]ed him when they found eight balls had passed through him in different directions; the bear being old the flesh was indifferent, they therefore only took the skin and fleece, the latter made us several gallons of oil.

It was after the sun had set before these men come up with us, where we had been halted by an occurence, which I have now to recapitulate, and which altho' happily passed without ruinous injury, I cannot recollect but with the utmost trepidation and horror; this is the upsetting and narrow escape of the white perogue. It happened unfortunately for us this evening that Charbono was at the helm of this Perogue, in stead of Drewyer, who had previously steered her; Charbono cannot swim and is perhaps the most timid waterman in the world; perhaps it was equally unluckey that Capt. C. and myself were both on shore at that moment, a circumstance which rarely happened; and tho' we were on the shore opposite to the perogue, were too far distant to be heard or to do more than remain spectators of her fate; in this perogue were embarked, our papers, Instruments, books medicine, a great

part of our merchandize and in short almost every article indispensibly necessary to further the views, or insure the success of the enterprize in which we are now launched to the distance of 2200 miles. surrice it so say, that the Perogue was under sail when a sudon squawl of wind struck her obliquely, and turned her considerably, the steersman allarmed, in stead of puting, her before the wind, lufted her up into it, the wind was so violent that it drew the brace of the squarsail out of the hand of the man who was attending it, and instantly upset the perogue and would have turned her completely topsaturva, had it not have been from the resistance mad by the oarning [awning] against the water. In this situation Capt. C. and myself both fired our guns to attract the attention if possible of the crew and ordered the halyards to be cut and the sail hawled in, but they did not hear us; such was their confusion and consternation at this moment, that they suffered the perogue to lye on her side for half a minute before they took the sail in. The perogue then wrighted but had filled within an inch of the gunwals; Charbono still crying to his god for mercy, had not yet recollected the rudder, nor could the repeated orders of the Bowsman, Cruzat, bring him to his recollection untill he threatend to shoot him instantly if he did not take hold of the rudder and do his duty. the waves by this time were runing very high, but the fortitude resolution and good conduct of Cruzat saved her; he ordered 2 of the men to throw out the water with some kettles that fortunately were convenient, while himself and two others rowed her as[h]ore, where she arrived scarcely above the water; we now took every article out of her and lay them to drane as well as we could for the evening, baled out the canoe and secured her.

there were two other men beside Charbono on board who could not swim, and who of course must also have perished had the perogue gone to the bottom. while the perogue lay on her side, finding I could not be heard, I for a moment forgot my own situation, and involluntarily dropped my gun, threw aside my shot pouch and was in the act of unbuttoning my coat, before I recollected the folly of the attempt I was about to make; which was to throw myself into the river and indeavour to swim to the perogue; the perogue was three hundred yards distant the waves so high that a perogue could scarcely live in any situation, the water excessively

could, and the stream rappid; had I undertaken this project therefore, there was a hundred to one but what I should have paid the forfit of my life for the madness of my project, but this had the perogue been lost, I should have valued but little. After having all matters arranged for the evening as well as the nature of the circumstances would permit, we thought it a proper occasion to console ourselves and cheer the sperits of our men and accordingly took a drink of grog and gave each man a gill of sperits.

THURSDAY MAY 16TH

The morning was fair and the day proved favorable to our operations; by 4 oClock in the evening our Instruments, Medicine, merchandize provision &c, were perfectly dried, repacked and put on board the perogue. the loss we sustained was not so great as we had at first apprehended; our medicine sustained the greatest injury, several articles of which were intirely spoiled, and many others considerably injured, the ballance of our losses consisted of some gardin seeds, a small quantity of gunpowder, and a few culinary articles which fell overboard and sunk. the Indian woman to whom I ascribe equal fortitude and resolution, with any person onboard at the time of the accedent, caught and preserved most of the light articles which were washed overboard.

in the early part of the day two of our men fired on a panther, a little below our encampment, and wounded it; they informed us that it was very large, had just killed a deer partly devoured it, and in the act of concealing the ballance as they discovered him. this morning a white bear toar Labuiche's coat which he had left in the plains.

FRIDAY MAY 17TH

we employed the toe line the greater part of the day; the banks were firm and shore boald which favoured the uce of the cord. I find this method of ascending the river, when the shore is such as will permit it, the safest and most expeditious mode of traveling, except with sails in a steady and favourable breze. the great number of large beds of streams perfectly dry which we daily pass indicate a country but badly watered, which I fear is the case



with the country through which we have been passing for the last fifteen or twenty days. Capt. Clark walked on shore this evening and killed an Elk; buffaloe are not so abundant as they were some days past. the party with me killed a female brown bear, she was but meagre, and appeared to have suckled young very recently. Capt. Clark narrowly escaped being bitten by a rattlesnake in the course of his walk, the party killed one this evening at our encampment, which he informed me was similar to that he had seen; this snake is smaller than those common to the middle Atlantic States, being about 2 feet 6 inches long; it is of a yellowish brown colour on the back and sides, variagated with one row of oval spots of a dark brown colour lying transversely over the back from the neck to the tail, and two other rows of small circular spots of the same colour which garnis the sides along the edge of the scuta. it's bely contains 176 [s]cuta on the belly and 17 on the tale. Capt Clark saw an Indian fortified camp this evening, which appeared to have been recently occupied, from which we concluded it was probable that it had been formed by a war party of the Menetares who left their vilage in March last with a view to attack the blackfoot Indians in consequence of their having killed some of their principal warriors the previous autumn. we were roused late at night by the Sergt. of the guard, and warned of the danger we were in from a large tree that had taken fire and which leant immediately over our lodge. we had the loge removed, and a few minutes after a large proportion of the top of the tree fell on the place the lodge had stood; had we been a few minutes later we should have been crushed to attoms. the wind blew so hard, that notwithstanding the lodge was fifty paces distant from the fire it sustained considerable injury from the burning coals which were thrown on it; the party were much harrassed also by this fire which communicated to a collection of fallen timber, and could not be extinguished.

[Clark]

MAY 19TH SUNDAY 1805

a verry cold night, the murckery stood at 38 at 8 oClock this morning, a heavy dew which is the 2d I have seen this spring. The fog (which was the first) was so thick this morning that we could not Set out untill the Sun was about 2 hours up, at which time a small breeze sprung up from the E which cleared off the

fog & we proceeded on by means of the Cord The hills are high & rugged the countrey as yesterday. I walked on Shore with two men we killed a white or grey bear; not withstanding that it was Shot through the heart it ran at it's usial pace near a quarter of a mile before it fell. Capt Lewis's dog was badly bitten by a wounded *beaver* and was near bleading to death, after killing the Bear I continued my walk alone, & killed 3 Deer & a Beaver finding that the Perogues were below I assended the highest hill I could see, from the top of which I saw the mouth of *M. Shell R* & the meanderings of the Missouri for a long distance. I also saw a high mountain in a westerley direction, bearing S.S.W. about 40 or 50 miles distant, in the evening the river was verry crooked and much more rapid & containing more sawyers than any which we have passed above the River Platte Capt Lewis walked on Shore this after noon & killed an Elk, Bück & a Beaver, I kiled three Deer at dinner, the hunters killed three other Deer to day several beaver also killed. We camped on the Stard Side in a bottom of small cotton wood

[Lewis]

MONDAY 20TH 1805.

The hunters returned this evening and informed us that the country continued much the same in appearance as that we saw where we were or broken, and that about five miles ab[ov]e the mouth of shell river a handsome river of about fifty yards in width discharged itself into the shell river on the Stard. or upper side; this stream we called Sâh-câ-ger we-âh or bird woman's River, after our interpreter the Snake woman.

[Clark]

MAY 20TH MONDAY 1805

a fine morning wind from the N E. river falling a little we set out at 7 oClock and proceeded on verry well as usial by the assistance of the cord passed some verry swift water, river narrow and crooked, at 11 oClock arrived at the mouth of *Shell* river on the Lard Side and formed a camp for the present, haveing passed a large creek about 4 miles below on the Ld Side which we call Blowing fly Creek from the emence quantities of those insects which geather on our meat in such numbers that we are oblige to brush them off what we eate. *Muscle Shell* River falls in on Lard

Side 2270 miles up [from the mouth of the Missouri] contains a greater perportion of water than Rivers of its size below, I measured it and find it to be 110 yards wide, the water of a Greenish Yellow Colour, and appers to be navigable for Small craft. The *Minetarres* inform us that this river heads in the 1st of the rocky Mountains & passes through a broken Countrey. its head at no great distance from the Yellow Stone River The Countrey about this river as described yesterday

The Missouri at the mouth of Shell River is 222 yards wide with a smoth current the Missouri water is not so muddey as below, but retains nearly its usial cholour, and the sand principally confined to the points I killed two Deer & an Elk, the hunters killed an Elk & several deer nearly for their skins to make Leagins Sent men out in every derection, the Countrey generally verry broken some leavel plains up the *Shell* river. The bottoms of the *Shell* river is well timbered as also a small river which falls into that river on the upper Side 5 miles above its mouth. The hills on the Lard. contain scattering Pine & cedar

MAY 22ND WEDNESDAY 1805

The wind continued to blow so violently hard we did not think it prudent to set out untill it luled a little, about 10 oClock we set out the morning cold, Capt Lewis walked out before dinner & killed a Deer, I walked out after dinner and assended a but[te] a few miles [off] to view the countrey, which I found roleing & of a verry rich stickey soil producing but little vegetation of any kind except the prickley pear, but little grass & that verry low. a great deal of scattering *Pine* on the Lard Side & Some few on the Stard. Sd. game not so abundant as below, the river continues about the same width, fewer Sand bars & current more regular, river falls about an inch a day

We camped on the Stard. Side, earlier than we intend on account of saveing the oil of a bear which the party killed late this afternoon.

Maney of the Creeks which appear to have no water near ther mouths have streams of running water higher up which rise & waste in the sand or gravel. the water of those creeks are so much impregnated with the salt substance that it cannot be Drank with pleasure.

---

CHAPTER IX

FROM THE MUSSELHELL TO MARIA'S RIVER

---

[Clark]

MAY 23RD THURSDAY 1805

A severe frost last night, the Thrmotr. stood at the freesing point this morning i. e. 32 a 0. wind S W. the water freezes on the oars Ice on the edge of the river. a mountain which appears to be 60 or 70 miles long bearing E. & W is about 25 miles distant from this river I walked on shore and killed 4 deer & an Elk, & a beaver in the evening we killed a large fat Bear, which we unfortunately lost in the river, after being shot took the water & was carried under a drift passed in course of this day three Islands, two of them covered with tall timber & a 3rd with willows

The after part of this day was worm & the Musquetors troublesome. Saw but five Buffalow a number of Elk & Deer & 5 bear & 2 antilopes to day. the river beginning to rise, and current more rapid than yesterday,

MAY 25TH SATURDAY 1805

I walked on shore and killed a female *Ibi* or big horn animal in my absence Drewyer & Bratten killed two others, this animal is a species peculiar to this upper part of the Missouri, the head and horns of the male which Drewyer killed to day weighed 27 lbs. it was somewhat larger than the mail of the Common Deer; the body reather thicker deeper and not so long in proportion to it's hight as the common Deer; the head and horns of the male are remarkably large compared with the other parts of the animal; the whole form is much more delicate than that of the common goat, and there is a greater disparity in the size of the

bluffs where we had passed as we ascended the river. notwithstanding the rain that has now fallen the earth of these bluffs is not wet to a greater debth than 2 inches; in it's present state it is precisely like walking over frozen grownd which is thawed to small debth and slips equally as bad. this clay not only appears to require more water to saturate it as I before observed than any earth I ever observed but when saturated it appears on the other hand to yeald it's moisture with equal difficulty.

In passing along the face of one of these bluffs today I sliped at a narrow pass of about 30 yards in length and but for a quick and fortunate recovery by means of my espointoon I should been precipitated into the river down a craggy pricipice of about ninety feet. I had scarcely reached a place on which I could stand with tolerable safety even with the assistance of my espointoon before I heard a voice behind me cry out god god Capt. what shall I do on turning about I found it was Windsor who had sliped and fallen abut the center of this narrow pass and was lying prostrate on his belley, with his wright hand arm and leg over the precipice while he was holding on with the left arm and foot as well as he could which appeared to be with much difficulty. I discovered his danger and the trepidation which he was in gave me still further concern for I expected every instant to see him loose his strength and slip off; altho' much allarmed at his situation I disguised my feelings and spoke very calmly to him and assured him that he was in no kind of danger, to take the knife out of his belt behind him with his wright hand and dig a hole with it in the face of the bank to receive his wright foot which he did and then raised himself to his knees; I then directed him to take off his mockersons and to come forward on his hands and knees holding the knife in one hand and the gun in the other this he happily effected and escaped. those who were some little distance bhind returned by my orders and waded the river at the foot of the bluff where the water was breast deep.

it was useless we knew to attempt the plains on this part of the river in consequence of the numerous steep ravines which intersected and which were quite as bad as the river bluffs. we therefore continued our rout down the river sometimes in the mud and water of the bottom lands, at others in the river to our breasts and when the water became so deep that we could not wade we cut foot-

steps in the face of the steep bluffs with our knives and proceded. we continued our disagreeable march th[r]ough the rain mud and water untill late in the evening having traveled only about 18 Miles, and encamped in an old Indian stick lodge which afforded us a dry and comfortable shelter. during the day we had killed six deer some of them in very good order altho' none of them had yet entirely discarded their winter coats. we had reserved and brought with us a good supply of the best peices; we roasted and eat a hearty supper of our venison not having taisted a mosel before during the day; I now laid myself down on some willow boughs to a comfortable nights rest, and felt indeed as if I was fully repaid for the toil and pain of the day, so much will a good shelter, a dry bed, and comfortable supper revive the sperits of the waryed, wet and hungry traveler.

vided by Islands, Some Elk Bear & Deer and Some small timber on the Islands. Great quantities of Currents red, black, yellow, Purple, also Mountain Currents which grow on the Sides of Clifts, inferior in taste to the others haveing Sweet pineish flaver and are red & yellow, Choke Cheries, Boin roche, and the red buries also abound. Musquetors verry troublesom untill the Mountain breeze sprung up, which was a little after night.

[Lewis]

FRIDAY JULY 26TH 1805.

current strong with frequent riffles; employ the cord and seting poles, the oars scarcely ever being used the high lands are thin meagre soil covered with dry low sedge and a species of grass also dry the seeds of which are armed with a long twisted hard beard at the upper extremity while the lower point is a sharp subulate, firm point beset at it's base with little stiff bristles standing with their points in a contrary direction to the subulate point to which they answer as a barb and serve also to pres it forward when once entered a small distance. these barbed seed penetrate our mockersons and leather legings and give us great pain untill they are removed. my poor dog suffers with them excessively, he is constantly binting and scratching himself as if in a rack of pain.

[Clark]

JULY 26TH FRIDAY 1805

I deturmined to leave Shabono & one man who had Sore feet to rest & proceed on with the other two to the top of a mountain 12 miles distant west from thence view the river & vallies a head, we with great difucelty & much fatigue reached the top at 11 oClock from the top of this mountain I could see the Course of the North fork about 10 miles meandering through a Vallie but could discover no Indians or sign which was fresh. I could also See Some distance up the Small River below, and also the Middle fork. after Satisfying my Self returned to the two me[n] by an old Indian parth, on this parth & in the Mountain we came to a Spring of excessive cold water, which we drank reather freely of as we were almost famished; not with Standing the precautions of wetting my face, hands, & feet I soon felt the effects of the water. We Contind thro a Deep Vallie without a Tree to Shade us scorch-

ing with heat to the men who had killed a pore Deer, I was fatigued my feet with Several blisters & Stuck with *prickley pears*. I ate but verry little deturmined to cross to the Middle fork and examine that. we crossed the Missouri which was divided by a verry large Island the first Part was knee deep the other waste deep & very rapid,<sup>5</sup> I felt my Self verry unwell & took up Camp on the little river 3 miles above its mouth & near the place it falls into the bottom a few Drops of rain this evening.

[Lewis]

SATURDAY JULY 27TH 1805.—

We set out at an early hour and proceeded on but slowly the current still so rapid that the men are in a continual state of their utmost exertion to get on, and they begin to weaken fast from this continual state of violent exertion. at 9. A.M. at the junction of the S.E. fork of the Missouri<sup>6</sup> and the country opens suddonly to extensive and beatifull plains and meadows which appear to be surrounded in every direction with distant and lofty mountains; supposing this to be the three forks of the Missouri I halted the party on the Lard. shore for breakfast. and walked up the S.E. fork about ½ mile and ascended the point of a high limestone clift from whence I commanded a most perfect view of the neighbouring country. from E. to S. between the S.E. and middle forks a distant range of lofty mountains ran their snow clad tops above the irregular and broken mountains which lie adjacent to this beautifull spot. between the middle and S.E. forks near their junction with the S.W. fork there is a handsome site for a fortification. after making a draught of the connection and meanders of these streams I decended the hill and returned to the party, took breakfast and ascended the S.W. fork 1¼ miles and encamped at a Lard. bend in a handsome level smooth plain just below a bayou, having passed the entrance to the middle fork ½ a mile. here I encamped to wait the return of Capt. Clark and to give the men a little rest which seemed absolutely necessary to them. at the junc-

<sup>5</sup> From Lewis's summary of Clark's report: "Here Charbono was very near being swept away by the current and cannot swim, Capt. C. however risked him[self] and saved his life."

<sup>6</sup> Lewis's Southeast Fork, which he reaches first because he is coming up the river whereas Clark traveled overland, is Clark's South Fork, the Gallatin.

## Just a Few Really Great Lewis and Clark Resources: To Get You Going

Warning-You will get hooked if you get into these guys...

### Discovering Lewis & Clark

<http://www.lewis-clark.org/>

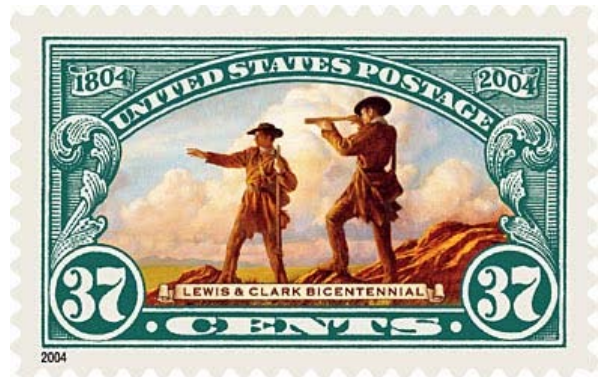
### The Journals of the Lewis and Clark Exhibition

<http://lewisandclarkjournals.unl.edu/>

### Lewis and Clark: The Journey of the Corps of Discovery

Ken Burns, PBS Program and Links (DVD)

<http://www.pbs.org/lewisandclark/>



### And Don't Forget "a side of" Sacagawea

<http://www.sacagawea.com/>

[http://www.pbs.org/weta/thewest/people/s\\_z/sacagawea.htm](http://www.pbs.org/weta/thewest/people/s_z/sacagawea.htm)



### Suggested Reading:

*Undaunted Courage*, Ambrose, Stephen E., 1996, Simon & Schuster, New York, NY

(Widely available in Hardcover and Paperback)

### More Funny Money...



U. S. \$10 Note - Bison / Buffalo, 1901  
Gold Certificate - Legal Tender

Issued to stimulate interest in the Lewis and Clark Centennial Exposition held in Portland Oregon in 1905. It features "Buffalo Bill" (sic) in the center flanked by portraits of Meriwether Lewis and William Clark.

## Abraham Lincoln (1809-1865)

Surveyor 1833

“Always bear in mind that your own resolution to succeed is more important than any other.”

“It is better to remain silent and be thought a fool than to open one's mouth and remove all doubt.”

“Give me six hours to chop down a tree and I will spend the first four sharpening the axe.”

-Abraham Lincoln



Abraham Lincoln, 1809-1865, 16th president of the U.S. (1861-65) born in Kentucky in a backwoods cabin, Lincoln was almost entirely self-educated. In 1831 he settled in New Salem, Illinois and worked as a storekeeper, surveyor and postmaster while studying law.

During his life, Abraham Lincoln held many jobs including lawyer, tavern keeper, rail splitter, storekeeper, postmaster and surveyor. His career as a surveyor began in 1833 when John Calhoun, Sangamon County Surveyor (Illinois), offered Lincoln a job as his assistant.

Upon accepting the appointment, Lincoln's first task was to learn about surveying. He borrowed two text books – [\*A System Of Geometry And Trigonometry With a Treatise On Surveying\*](#) by Abel Flint (1804) and [\*The Theory and Practice of Surveying\*](#) by Robert Gibson (1814) - and proceeded with his studies assisted by Mentor Graham, a schoolmaster. As he concluded his studies, he purchased some second hand equipment with which he started his practice.

Lincoln's career as a surveyor lasted only a few years. His projects included government surveys, road surveys, town lots, and private surveys. Financially, there were difficulties and at one point his equipment was sold at auction to satisfy a debt. A farmer named John Short bought the items for \$120 and returned them to Lincoln.

The instruments passed through several owners and are now on display at Lincoln's New Salem State Historic Site.

### LINCOLN THE SURVEYOR

Online Resource: [http://www.surveyhistory.org/lincoln\\_the\\_surveyor1.htm](http://www.surveyhistory.org/lincoln_the_surveyor1.htm)

‘In the fall of 1833 came Abraham Lincoln’s entry into the most highly technical and responsible work he had known. Writing of it later, he said, "The Surveyor of Sangamon [County] offered to depute to A[braham] that portion of his work which was within his part of the county. He accepted, procured a compass and chain, studied Flint, and Gibson a little, and went at it. This procured bread and kept soul and body together." There were farm sections, roads and towns needing their boundary lines marked clear and beyond doubt on maps - more than the county surveyor, John Calhoun, could handle. On the suggestion of Pollard Simmons, a farmer and Democratic politician living near New Salem, Calhoun, a Jackson Democrat, appointed Lincoln, who went 18 miles to Springfield to make sure he wasn’t tied up politically and could speak as he pleased.

Then for six weeks, daytime and often all of nighttime, he had his head deep in Gibson's *Theory and Practice of Surveying* and Flint's *Treatise on Geometry, Trigonometry and Rectangular Surveying*. From decimal fractions one book ran on onto logarithms, the use of mathematical instruments, operating the chain, circumferentor, surveying by intersections, changing the scale of maps, leveling, methods for mensuration of areas. Many nights, said Mentor Graham's daughter, she woke at midnight to see Lincoln and her father by the fire, figuring and explaining, her mother sometimes bringing fresh firewood for better lighting. On some nights he worked alone till daylight and it wore him down. He was fagged, and friends said he looked like a hard drinker after a two weeks' spree. Good people said, "You're killing yourself."

In six weeks, however, he had mastered his books, and Calhoun put him to work on the north end of Sangamon County. The open air and sun helped as he worked in the field and timberland with compass and measurements. His pay was \$2.50 for "establishing" a quarter section of land, \$2.00 for a half-quarter, 25 cents to 37½ cents for small town lots. He surveyed the towns of Petersburg, Bath, New Boston, Albany, Huron, and others. He surveyed roads, school sections, pieces of farm land from four-acre plots to 160-acre farms. His surveys became known for care and accuracy and he was called on to settle boundary disputes. In Petersburg, however, he laid out one street crooked. Running it straight and regular, it would have put the house of Jemima Elmore and her family into the street. Lincoln knew her to be working a small farm with her children and she was the widow of Private Travice Elmore, honorable in service in Lincoln's company in the Black Hawk War.

For his surveying trips he had bought a horse, saddle and bridle from William Watkins for \$57.86, and for nonpayment Watkins on April 26, 1834, got judgment in court and levied on Lincoln's personal possessions. It looked as though he would lose his surveying instruments. Then Bill Green showed up and turned in a horse on the Watkins judgment - and James Short came from Sand Ridge to the auction Lincoln was too sad to attend and bid in the saddle, bridle, compass and other surveying instruments. When Short brought them to Lincoln it hit him as another surprise in his young life. Short liked Lincoln as a serious student, a pleasant joker, and said that on the farm "he husks two loads of corn to my one."

- Carl Sandburg, *Abraham Lincoln: The Prairie Years and The War Years* (New York, 1926), p. 44-46.

## **The Abraham Lincoln Papers at the Library of Congress**

Online Resource: <http://memory.loc.gov/ammem/alhtml/malhome.html>

Series 1. General Correspondence. 1833-1916.

Abraham Lincoln, Michael Killion, and Hugh Armstrong to Sangamon County Illinois Court, June [2] 1834 (Report with Map)

[http://memory.loc.gov/cgi-bin/query/P?mal:2:./temp/~ammem\\_b8nT::](http://memory.loc.gov/cgi-bin/query/P?mal:2:./temp/~ammem_b8nT::)

From Michael Killion, Hugh Armstrong, and Abraham Lincoln to the County Commissioners Court for the County of Sangamon, June [2] 1834

To the county commissioners court for the county of Sangamon at its June term 1834. We the undersigned being appointed to view and locate a road. Beginning at Musick's ferry on Salt creek. (Via) New Salem to the county line in the direction to Jacksonville-- respectfully report -- that we have performed the duties of said view and location as required by law. and that we have made the location on good ground -- and believe the establishment of the same to be necessary and proper--

The enclosed Map gives the courses and distances as required by law

Michael Killion

Hugh Armstrong

A. Lincoln

A Lincoln 5 dys -- at \$3.00 - \$15.00

John A. Kelsoe chain beare for 5 dys -- at 75 cts -- \$3.75

Robert Loyed " ... " ... \$3.75

Hugh Armstrong for services as axe-man 5 dys. At 75 cts. -- -- -- 3.75

A Lincoln for making plat & report -- \$2.50



This document, and the accompanying map are among the earliest surviving records of Lincoln's surveying career. He had been one of the petitioners to the county commissioners' court in February (*Collected Works*, I, 21), asking for viewers to be appointed to locate a road over the route described. The petition had been granted, and Killion, Armstrong, and Lincoln had been given the commission to locate the road. The list of expenses in pencil may be in Lincoln's hand and probably represent the amounts claimed.

### Of Further Interest:

#### Abraham Lincoln Collectibles:

<http://www.abelincoln.com/iplsa.html>

#### National Museum of Surveying, Springfield Illinois:

<http://www.nationalmuseumofsurveying.org/>

#### Completed Lincoln Surveyor Statue Project

(Illinois Professional Land Surveyors Association)

<http://www.iplsa.org/images/LincolnStatue.JPG>

<http://www.iplsa.org/>





## Henry David Thoreau (1817-1862)

Image Credit:  
The U.S. Post Office's 1967 Thoreau commemorative stamp,  
designed by Leonard Baskin.

"Beware of all enterprises that require a new set of clothes."

"I would rather sit on a pumpkin and have it all to myself, than  
be crowded on a velvet cushion."

-Henry David Thoreau

### Presenters Notes:

I always knew that Thoreau was a captivating literary figure and an early environmental activist, but I became particularly fascinated with him when I found out that he was also a Land Surveyor. Through some basic research, I discovered that many of his journals and papers have been preserved and protected. Thanks to Thoreau's many accomplishments, celebrity status and notoriety at Walden Pond, there are numerous individuals and organizations that remain devoted to promoting Thoreau's legacy.

I happened to be near Concord, Massachusetts a few years ago and I made a point to visit Walden Pond, swim over its seemingly bottomless eerie depths, visit the Special Collection at the Concord Free Public Library, browse the Concord Museum, and visit Thoreau's gravesite on "Author's Ridge" at Sleepy Hollow Cemetery. It was a memorable day highlighted by my direct "white glove" study of Thoreau's original survey drawings and field notes. I will share my first hand analysis of Thoreau's work and hope to shed some light on this complex, inspirational and intriguing character who happened to be a very good surveyor, by the way.

-Kimberly A. Buchheit

### Henry David Thoreau, Biography

Sourced from: [http://en.wikipedia.org/wiki/Henry\\_David\\_Thoreau](http://en.wikipedia.org/wiki/Henry_David_Thoreau)

Henry David Thoreau (born David Henry Thoreau; July 12, 1817 – May 6, 1862) was an American author, poet, abolitionist, naturalist, tax resister, development critic, surveyor, historian, philosopher, and leading transcendentalist. He is best known for his book *Walden*, a reflection upon simple living in natural surroundings, and his essay, *Civil Disobedience*, an argument for individual resistance to civil government in moral opposition to an unjust state.

Thoreau's books, articles, essays, journals, and poetry total over 20 volumes. Among his lasting contributions were his writings on natural history and philosophy, where he anticipated the methods and findings of ecology and environmental history, two sources of modern day environmentalism. His literary style interweaves close natural observation, personal experience, pointed rhetoric, symbolic meanings, and historical lore; while displaying a poetic sensibility, philosophical austerity, and "Yankee" love of practical detail. He was also deeply interested in the idea of survival in the face of hostile elements, historical change, and natural decay; at the same time imploring one to abandon waste and illusion in order to discover life's true essential needs.

He was a lifelong abolitionist, delivering lectures that attacked the Fugitive Slave Law while praising the writings of Wendell Phillips and defending abolitionist John Brown. Thoreau's philosophy of civil disobedience influenced the political thoughts and actions of such later figures as Leo Tolstoy, Mahatma Gandhi, and Martin Luther King, Jr.



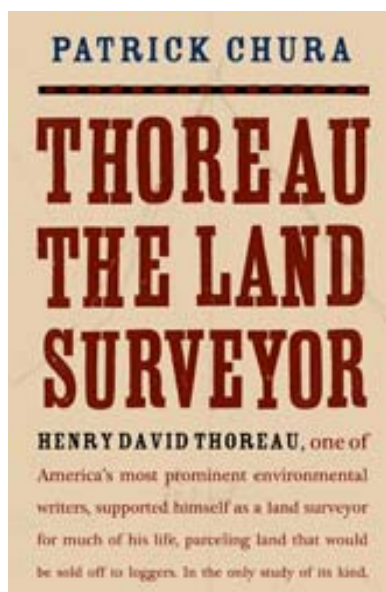
Thoreau is sometimes cited as an individualist anarchist. Though *Civil Disobedience* seems to call for improving rather than abolishing government – "I ask for, not at once no government, but *at once* a better government"– the direction of this improvement aims at anarchism: "'That government is best which governs not at all;' and when men are prepared for it, that will be the kind of government which they will have." Richard Drinnon partly blames Thoreau for the ambiguity, noting that Thoreau's "sly satire, his liking for wide margins for his writing, and his fondness for paradox provided ammunition for widely divergent interpretations of 'Civil Disobedience.'" He further points out that although Thoreau writes that he only wants "at once" a better government, that does not rule out the possibility that a little later he might favor no government.

Henry David Thoreau, In the early 1850s, Thoreau's facility as a land surveyor became widely known and he supported himself by surveying through the 50s. Thoreau published two books in his lifetime and often gave lectures, but these were never profitable enough for him to give up his surveying. He saw surveying as an opportunity to pursue his real interest: observing the natural world around him. "Surveying," he writes in the Journal, "seems a noble employment which brings you within hearing of [the birds]" (29 April 1856). In 1847, Thoreau described his life for the members of his Harvard class this way: "I am a School master--a Private Tutor, a Surveyor--a Gardener, a Farmer--a Painter, I mean a House Painter, a Carpenter, a Mason, a Day-Laborer, a Pencil-Maker, a Glass-paper Maker, a Writer, and sometimes a Poetaster."

### **A New and Modern Study of Thoreau**

Many thanks to author, Patrick Chura for granting permission to "reprint" excerpts from his recent publication, *Thoreau The Land Surveyor*, [University Press of Florida](#), 2010.

Dr. Chura's generosity in sharing his work and insight with us is greatly appreciated. Books will be available at NJSPLS SurvCon 2011, or they can be obtained in advance from through [The Thoreau Society, Shop at Walden Pond](#).



### **Overview**

Henry David Thoreau, one of America's most prominent environmental writers, supported himself as a land surveyor for much of his life, parceling land that would be sold off to loggers. In the only study of its kind, Patrick Chura analyzes this seeming contradiction to show how the best surveyor in Concord combined civil engineering with civil disobedience.

Placing Thoreau's surveying in historical context, *Thoreau the Land Surveyor* explains the cultural and ideological implications of surveying work in the mid-nineteenth century. Chura explains the ways that Thoreau's environmentalist disposition and philosophical convictions asserted themselves even as he reduced the land to measurable terms and acted as an agent for bringing it under proprietary control. He also describes in detail Thoreau's 1846 survey of Walden Pond. By identifying the origins of *Walden* in--of all places--surveying data, Chura re-creates a previously lost supporting manuscript of this American classic.

Patrick Chura is associate professor of English at the University of Akron and author of *Vital Contact: Downclassing Journeys in American Literature from Herman Melville to Richard Wright*.

**<Excerpts from *Thoreau The Land Surveyor*>**

FIGURE 6.4. Moore and Hosmer woodlots by Walden 130

FIGURE 7.1. *Directing John Brown to the Free State Camp* 144

TABLE 2.1. Reconstructed field notes for the Walden survey 43–44

## Preface

Thoreau once told a surveying client that the essence of his job was finding what predecessors had left behind. All his life, as he explained to Abel Brooks in 1857, he had been “making bounds, or rather finding them, re-making what has been unmade.”<sup>1</sup> This book remakes some of Thoreau’s boundaries—not the many physical property lines he created while surveying but intangible markers, remnants of his life and character that have been lost or neglected. In part, it is a book about the recovery of history, a difficult but exhilarating process.

It began with a desire to know more about nineteenth-century surveying itself—about what Thoreau actually did to earn money from 1849 to 1861. In the chapters that follow, I reconstruct essential processes of his work in the field and explore their meaning. This nontraditional critical approach was taken in preparation for the book’s other and more conventional aspect: a contextualized study of Thoreau’s journals, letters, field notes and published works for what they reveal about his use of land surveying as both a method of environmental inquiry and a primary source of income over the last dozen or so years of his life.

Since my father was a land surveyor and I, like my three brothers, accompanied him on many surveying outings in the 1970s and 80s, I had a strong sense of what Thoreau’s fieldwork involved. My father, now retired, was a good surveyor and civil engineer, but his theodolite was not much more technologically advanced than Thoreau’s compass. His steel measuring tapes were not much different from the sixty-six-foot iron-and-steel Gunter’s chain Thoreau used. The orange-and-white-striped range pole and Philly rod I carried while helping my dad lay out parking lots and strip malls in the suburbs of Saint Louis thirty years ago

were not essentially different from the "graduated staff" made of a birch sapling Thoreau used to sound the Concord River and conduct leveling experiments around Walden Pond.

My dad's career accounts for my initial interest in Thoreau's surveying, but there were others steps taken to prepare for this project. In the summer of 2006, I received a research grant from the University of Akron to spend some time in Concord with the Thoreau Survey Collection of the Concord Free Public Library. I worked primarily with the material in Thoreau's field notebook. The resulting article, "Economic and Environmental Perspectives in the Surveying 'Field-Notes' of Henry David Thoreau," parts of which are reproduced here, appeared in the *Concord Saunterer: A Journal of Thoreau Studies* in 2007.

To get some training with nineteenth-century tools and field methods, I took a course in historical surveying offered by the University of Akron Surveying and Mapping Department. We practiced in a dusty field near the campus tennis courts, using a replica brass compass and Gunter's chain. Our homework each week was to take the field notes we had made, "cast up" the data, and draft plane surveys of various shapes and levels of difficulty. Professors Gary Schuller and Mike Besch were generous with their knowledge, answering my many questions about antebellum surveying in general and Thoreau's work in particular. My six classmates, from whom I also learned much, were members of the university's historical surveying team.

With equipment on loan from the university and valuable help from Andy Kis, a recently returned veteran of the Iraq War who is now a land surveyor, I retraced, with compass and chain, some of Thoreau's old lines in Concord over several cold wet days in March 2008. After obtaining the necessary access permissions, Andy and I resurveyed an area that was meaningful to Thoreau at the western edge of Walden Pond. At Orchard House, we located and ran a 1,540-foot line Thoreau had surveyed on Bronson Alcott's property in 1857. Thoreau had indicated that he left a hickory stake and mound of fieldstones at the northwest corner of the property. Though the parcel is now subdivided into house lots, the old corner is still accessible. Near its location on an isolated wooded hillside we found more than a score of football-sized stones, scattered over a few square yards but clearly once arranged in a grouping. The next day, pacing distances on a draft survey Thoreau had made in an area south of

Walden, we came across a large oak, old enough to have been there in the 1850s, that had obviously been blazed—marked by a surveyor's axe—and still bore a prominent scar. We could not be absolutely certain that either one of these landscape alterations was Thoreau's work. But the trip was less about discovering monumentation than about walking briefly in Thoreau's footsteps and carrying out procedures that had shaped his consciousness.

The pond was only partially frozen that March, so we could not take our compass onto its surface as Thoreau had in the winter of 1846. We were nevertheless able to recreate several of the readings of bearing he took for his famous plan of Walden Pond. Using equipment very similar to his, we set up at the cabin site, positioning the legs of the tripod at the cabin threshold, and took bearings to the center of the pond and to the railroad tracks, reconstructing measurements at the core of the Walden survey. Though our sight lines were somewhat obstructed owing to the presence of more trees around the pond than there had been in the 1840s, our bearings were within a few degrees of Thoreau's. I recall copying down the angle made by the cabin, the center of the pond and the railroad—by our reckoning it was thirty-eight degrees—and standing for a moment behind the compass, transfixed by the view and by a feeling that the day had been meaningful.

Afterward, carrying the chain, compass box, tripod, auto level and range poles back along the wooded trail in the late-afternoon twilight, we encountered an elderly saunterer in a long gray overcoat, walking stick in hand, who observed us in passing. Perhaps he wondered if we were harbingers of some new encroachment on the woods, for he paused a few steps beyond us and politely called back, asking about our equipment. When I told him our story, he seemed quite pleased and exclaimed, "Oh, that's very interesting!" He understood, I think, that we were amateurs—as Thoreau himself had been when he measured the pond—and were there for reasons he could appreciate.

In July of 2008, I used a copy of Thoreau's preliminary sketch of Walden Pond first to reformulate the Walden field notes and then to redraw the map itself. These simple tasks became a thought-provoking, at times moving experience. When, in reproducing the beautifully radiating lines of the survey, the lines began to intersect and the pond began to take visible shape, I derived a sense of accomplishment that became a

strong incentive to this project. To learn more about something Thoreau cared deeply about was important to me, but I was also thrilled to be recovering an unusual type of lost information. Poring over an enlarged copy I had made of the draft survey, I considered that I was reading a new Thoreau text.

In the process, certain things were revealed. I had been aware that Thoreau was a meticulous worker and thinker, but I was now more deeply impressed with the time-consuming nature of his drafting and how much life and mental energy his more than 165 land surveys had demanded of him. Reproducing the field notes had taken about twelve hours and drawing the Walden map another full day, during which I became completely engrossed in the tasks and lost all track of time. Doing what Thoreau did brought home the realization that the work required a type of focus, concentration and patience that is rare in this age of short attention spans. My immersion in numbers and geometry broke down my comfortable, self-limiting reliance on letters and language, awakening me to the possibility that mathematics had liberated Thoreau's thinking as well.

Several times during the writing of this book, I've been reminded of our encounter with the elderly gentleman in the Walden woods by reading about similar encounters in Thoreau's journal. Once while Thoreau was working in the Concord countryside, "an Italian with a hand organ" stopped to marvel at the surveyor's compass. Thoreau likened the man's inquisitiveness to the children who were "curious about *his* machine."<sup>2</sup> As the incident shows, the compass is an instrument capable of stirring fascination. Part of my argument here is that in Thoreau's hands it was not only a simple device for doing work, but a machine in the modern sense—a complex mechanism for modifying and transforming power.

While he was surveying the Kettell farm in April 1858, a woman approached Thoreau and said of his compass, "This is what regulates the moon and stars."<sup>3</sup> In his journal, Thoreau transcribed Mrs. Polly Houghton's interesting remark without comment. If he had been pressed for an interpretation, however, he might very well have acknowledged a form of truth in her observation. As this book will show, surveying tools often did serve Thoreau as a means of "regulating" his universe—of monitoring its characteristics, probing its truths and translating its laws.

On still another occasion, Abel Brooks, the nearly deaf landowner to whom Thoreau had explained his lifelong purpose of remaking boundaries, was fascinated by the compass but apparently less perceptive than Mrs. Houghton: "He did not in the least understand my instrument," Thoreau observed, "but had full faith that it knew the way straight through the thickest wood to missing bounds."<sup>4</sup> This book, though hopefully more discerning than the hard-of-hearing client, rests on a comparable faith that the compass points the way, leading to the discovery of significant lost bounds and lost measures in the life of Henry Thoreau.

their direct attack on the South, they called the radical insurgency that would institute the new American order "the surveying expedition." In doing so, they expressed the bond that joined them in terms the Concord surveyor had comprehended and presaged. As Thoreau undoubtedly realized and historian Evan Carton's research has more recently noted, "Brown's surveyors signified freedom."<sup>43</sup>

We might then ask how Brown's example manifested itself from the time Thoreau met him to the end of his paid surveying fieldwork in 1861. Whether Brown had a form of tangible impact on Thoreau's business is hard to determine. There are, however, some interesting observations to be made relating to Thoreau's professional output from 1857 onward. During the nine months following Brown's visit to Concord, Thoreau made twenty-four surveys, many of which took several full days of work, and he made a total of thirty surveys in the calendar year after he met Brown. In terms of jobs completed, this was by far the most active stretch of his surveying career. In 1859, Thoreau would dedicate himself to surveying in an unprecedented way, undertaking hundreds of hours of fieldwork in his largest single engineering project, the survey of the Concord River, and composing the most extensive surveying-based journal entries he had ever written.

Overall, the final stages of Thoreau's active life evince not less but more commitment to land surveying, along with a qualitative difference in his feelings about his work. As we might then expect, fieldwork and the lessons taken from it are a strong thematic thread in several of Thoreau's important late essays. "Walking" and "Life Without Principle" display the author's heightened attention to the ordering of his literary legacy, but they are far from silent about his legacy as a measurer of land. Thoreau died before he could undertake the book-length biography of Brown he had apparently intended, a work that some thought him the most suited of all Brown's admirers to write.<sup>44</sup> If Thoreau had written this book, he would have extolled Brown's heroic example, explained the philosophical bonds they shared, and almost certainly enhanced his treatment of the abolitionist's famous deeds and famous words with a carefully written chapter about land surveying.

## 8

### "I am a surveyor"

I have a commonplace-book for facts and another for poetry—but I find it difficult always to preserve the vague distinction which I had in my mind . . . I see that if my facts were sufficiently vital and significant—perhaps transmuted more into the substance of the human mind,—I should need but one book of poetry to contain them all.

—Thoreau, *Journal*, February 18, 1852

My practicalness is not to be trusted to the last.

—Thoreau, *Journal*, June 6, 1851

From the late 1850s to his final paid surveying job in January of 1861, the documentation of measuring projects in Thoreau's "Field-Notes" gets noticeably smaller and the handwriting less legible. Earlier in his career, a typical field-notes entry might include a page to several pages of well-organized compass bearings, distances and calculations, but later there are seven to eight short entries per notebook page, with no supporting data. The attenuation of surveying descriptions in the "Field-Notes" does not

mean that Thoreau was professionally inactive—his eleven jobs in 1859 and thirteen in 1860 are about average for his career—but it does indicate that he was making notes and calculations on other sheets and kept the notebook simply as a nominal record of work performed. Thus near the end of the "Field-Notes" appears the laconic one-line datum "Aug 20 1860 surveyed N. Hawthorne's land."

As the formal documentation of surveys in his field notes shrinks, the recording of surveying data in Thoreau's journal increases exponentially. The sudden proliferation of facts and statistics in a space that had been reserved primarily for personal and philosophical prose occurs in connection with Thoreau's long-term study of the Concord River, a project that engaged him on an almost daily basis for extended periods in 1859 and 1860. Referring to this project, Emerson exaggerated only slightly when he wrote in August of 1859 that "Henry T. occupies himself with the history of the river, measures it, weighs it, and strains it through a colander to all eternity."<sup>1</sup> That summer, Thoreau took literally thousands of river soundings, sometimes returning to the same spot hourly to check on barely measurable fluctuations of the water level. He determined the height and width of bridges, physically measured and charted distances between bridges, sketched and theorized the causes of riverbed irregularities, analyzed the river's current, checked moisture levels in its floodplains, described water temperatures and turbidity, and noted the location and condition of dozens of plant species in the river valley ecosystem. From June through August of 1859 and 1860, the "river survey" was often an all-consuming, more-than-full-time labor.

Emerson's bemused, somewhat condescending tone toward Thoreau's work on the river exemplifies a misconception that has skewed the priorities of some Thoreau scholars over the years. The implication that Thoreau was wasting time in arcane nonliterary pursuits—for example merely "occupying himself" by carefully surveying the river—persisted into the twentieth century. When Bradford Torrey and F. H. Allen published Thoreau's edited *Journal* in 1906, they excised large amounts of river-survey material, explaining that such environmental facts were mere details that were without scientific value and "could be of no interest to the general reader."<sup>2</sup>

Even with Torrey's excisions, the *Journal* entries covering the period of the river survey are saturated with observations about the physical state

of the river. It seems that a good deal of environmental data evades the editorial censor only because the surveyor had begun to transform his data into sentences, to render numerical "facts" into formal prose: "From upper end of Sudbury Canal to Sherman's Bridge is 558 rods (1 mile 238 rods); by thread of river, 1000 (3 miles 40 rods), or nearly twice as far," Thoreau wrote in July of 1859. In August he noted, "The river began to fall perhaps yesterday, after rising perhaps fourteen or fifteen inches. It is now about one foot higher than before the rain of the 25<sup>th</sup>."<sup>3</sup> The rationale for these observations and many others was both work related and philosophical; in essence, Thoreau's surveying field notes and his prose journal had finally become one document.

Torrey's decision to expurgate the *Journal* is all the more ill advised because the data produced by Thoreau's close monitoring of the river's characteristics and biodiversity were politically important. These were the points of contention in the ongoing legal dispute between farmers and industrialists in the Concord River ecosystem. What became known as the Concord River flowage controversy began in the late eighteenth century with the construction of the Middlesex Canal Dam in Billerica. In a series of lawsuits against the dam owners that began in 1811, the farmers owning meadows along the Concord River claimed repeatedly that because the dam slowed drainage, the river flooded more frequently and retained moisture longer following summer rains. They argued that their meadows had grown softer and wetter, making access to them more difficult and spoiling the valuable crops of meadow hay or "pipes" that were used as winter fodder for their livestock. When the river level fell and the meadow hay began to dry out every July and August, the mill owners opened their supply reservoirs, flooding the meadows and spoiling farmers' hay before it could be harvested. The farmers lost several court cases in the 1810s and '20s. By Thoreau's day the problem had been worsened by dozens of textile and powder mills that had proliferated on the river and its tributaries. This "explosion of water-powered industry" put the flow rate of the Concord River under the control of emerging industrial interests, much to the detriment of the farmers who had worked the area for generations.<sup>4</sup>

At the peak of the legal controversy in 1859, Thoreau was hired by the River Meadow Association to help survey the river in preparing their case against the dam. He was asked to monitor depths and flow rates at

numerous points, including all of the river's bridges from East Sudbury to Billerica, a distance of over twenty-two miles. Thoreau's observations, measurements and soundings were supplemented by research into the river's history and the history of settlement along the Concord watershed. To obtain information he could not gather on his own, he interviewed or corresponded with many longtime residents of farms adjoining the river and its tributaries, asking them to remember when bridges were constructed or altered and how the geography of adjoining meadows had been changed by economic development over several decades. He recorded these recollections alongside the numerical data in his journal.<sup>5</sup>

While Thoreau brought an almost obsessive energy to this project, he seems not to have become a formal participant in the legal side of the controversy. Almost certainly due to his recognized need to carry out "neutral" surveying work, Thoreau's signature does not appear on any legal petitions submitted by the River Meadow Association. There are, however, ample indications that he basically sympathized with the farmers against the corporate interests that had damaged the meadows and tamed the river. In June of 1859, he noted that "the testimony of the farmers, etc., is that the river thirty to fifty years ago was much lower in the summer than now."<sup>6</sup> After discussing the case with Abel Hosmer and several other plaintiffs a month later, Thoreau caustically assessed the environmental consequences of commercial expansion, referring to the Concord River as "completely emasculated & demoralized" by the shutting of mill gates by industrial "operatives" above Concord.<sup>7</sup> In early 1860, Thoreau echoed the testimony of Colonel David Heard of Wayland, who said that the farmers' valley was now "dammed at both ends and cursed in the middle."<sup>8</sup> Ultimately, it was the more-politically-connected mill owners who prevailed in the case. They successfully argued before a legislative committee that the state had no right to appropriate their property for the benefit of a few farmers. As the Massachusetts legislature declared, reopening the river would "disturb and unsettle the existing manufacturing interests of the Commonwealth."<sup>9</sup>

The flowage controversy was a classic case of pitting the nation's emerging commercial-industrial power against the agrarian traditions of the past, but this was not the only reason Thoreau took a strong interest in it. Before he was hired by the meadow owners, he had expressed a desire to survey the river, not for its importance in a legal battle but for

what it would show about the laws of nature. A journal entry of March 17, 1859, records his amazement at the "unexpected water-lines" of the Concord River at flood stage, along with his inclination toward a herculean measuring task that would reveal the earth's "unseen shores" and the integrating principles of its geography:

Even if the highest water-mark were indicated at one point, the surveyor could not, with any labor short of infinite, draw these lines for us which wind about every elevation of earth or rock. Yet, though this slight difference of level which water so simply and effectually points out, is so unobservable by us ordinarily, no doubt Nature never forgets it for a moment, but plants grow and insects, etc., breed in conformity to it. Many a kingdom of nature has its boundaries parallel with this waving line. By these freshets, the relation of some field, usually far from the stream, to future or past deluge is suggested.<sup>10</sup>

Thoreau judges that it would take an extreme, "infinite" form of surveying labor to reveal "that part of the earth whose geography has never been mapped." He is intrigued by the insights that might be derived from locating the often-invisible boundaries between marine and dry-land environments, thereby "revealing the relation of this surface to the flood ordinarily far from it." One explanation for the extraordinary energy with which Thoreau formally surveyed the river beginning a few months later is that he already realized the project's great natural-science potential.

When the meadow owners engaged Thoreau for the river survey, he likely saw the project as an opportunity to put engineering principles into practice in a way that fortuitously merged purposes. Aside from aiding a creditable political cause, the survey was a chance to confront the challenging task of learning and internalizing the river's physiography while directly assessing the environmental impact of industrial development around his Concord home. His implacable efforts on the project were no doubt further legitimized by the unknown pay he received for the work, but it seems safe to say that his main motivations were far from financial, if only because the long hours he spent at the river were almost certainly out of all proportion to whatever wages he received.

The extensive statistics Thoreau gathered about the Concord River are not the only example of a surveying project that was integrated into his journal in the final stages of his life. On his fourth trip to Mount



Monadnock, in August of 1860, he made a detailed—though according to his personal standards “rudely measured”—topographical study of the vicinity, pacing distances on foot and taking directional bearings with a pocket compass, producing a survey map of the Monadnock peak and its immediate environs to a scale of sixty rods to an inch. In his entry of August 9, he combined his drawing with rapt verbal descriptions the area, even using a compass to determine the direction of the grooves in stone formations on the mountain surface. A reference study that Thoreau consulted on the mountain had found that the diluvial grooves ran nearly north and south. Thoreau looked carefully at the topography, sketched the grooves, and concluded that their direction actually varied between five and twenty compass degrees, “or, by the true meridian, more yet.” Thoreau’s apparent hypothesis asserted an analogy between the direction of the formations and the variable influence of terrestrial magnetism.<sup>11</sup>

Though the Monadnock experiment was certainly something Thoreau enjoyed in the short term, the Concord River undertaking was a long-standing passion. What it ensured was that Thoreau’s last major survey project was, in relation to his literary ambitions, very much like his first. Like his survey of Walden Pond made thirteen years earlier, the river survey had been incorporated into a coproduced literary text. Once there, both surveys were to some degree misunderstood by readers—the Walden map as a “capital satire and joke” by Emerson’s classmate, the river data as superfluous enough to be expunged by an editor. Both surveys linked and analyzed relationships between natural and man-made environmental bench marks and therefore carried implicit sociopolitical relevance. Finally, both surveys not only merged physics and philosophy but clearly asserted a coresponsiveness between the two. In sounding the Concord, for example, Thoreau had found that “the deep places in the river are not so obvious as the shallow ones and can only be found by carefully probing it. So perhaps it is with human nature”—an insight clearly of a kind with his discoveries about the anthropomorphically reflective dimensions of Walden Pond.<sup>12</sup>

Thoreau’s psychological management of the river survey—his unflinching acceptance of its physical demands and extensive translation of the project into literary subject matter through his journal—indicates that he had in part overcome his fears about the negative spiritual influ-

ences of hired engineering. Between the Walden Pond survey and the river survey—crucial examples of spiritually motivated fieldwork—more than 150 paid jobs, performed by Thoreau the businessman, had intervened. Though he was still surveying for money and still writing about the natural world, he no longer felt a desperate need to separate these processes, finding instead that his surveyor and naturalist incarnations could coexist and jointly serve the purposes to which his life was dedicated. Early in his surveying career, Thoreau had wondered if his “Field-Notes” and his journal could be the same book. By the summer of 1860, the merger was complete; poetry and facts were united in a single location, in one category, under a one-word title. And in the Concord census of 1860 undertaken by Samuel H. Rhoades, assistant marshal, Henry D. Thoreau, age 42, was for the first time listed as “Surveyor.”

Thoreau’s feelings about this aspect of his legacy are addressed in two of his final essays, the posthumously published “Life Without Principle” and “Walking,” both of which bravely confront paradoxes in the author’s economic life. A working title for “Life Without Principle” during its development as a lecture in the 1850s was “The Connection Between Man’s Employment and His Higher Life.” This may have been a more cumbersome designation than the one the author eventually agreed to, but it better conveys the essay’s final content. In February of 1862, as Thoreau’s health rapidly declined and he struggled to bring lecture notes together into a unified essay, his employment as a surveyor, along with his long-term attempt to align it with higher law, was a focal point of his thoughts.<sup>13</sup>

“Life Without Principle,” which Thoreau composed in full knowledge of his imminent death, draws attention to the important gap between the perceptions of surveying and Thoreau’s personal surveying rationale. Meaningfully embracing an identity he had earlier rejected, Thoreau unflinchingly describes land surveying as “my own business” and affirms with candor and finality, “I am a surveyor.”<sup>14</sup> Throughout the essay, he uses a series of implicit contrasts to explain and define his labor. By describing lives lived without principle, he adumbrates a life with principle; by relating to his audience how *not* to get one’s living, he illustrates through opposition how he has gotten his. When Thoreau states, “To have done anything by which you earned money *merely* is to have been truly idle or worse,”<sup>15</sup> he stresses differences between thoughtless drudg-

ery and more elevated exertions, implying that his own hired work has transcended pecuniary motives.

Nevertheless, the author is troubled because his contemporaries remain blind to the value of labor generally and his labor specifically. "Commonly, if men want anything of me, it is only to know how many acres I make of their land."<sup>16</sup> Differentiating his professional standards from those of "most" of his townsmen, he asserts his refusal to work for a "coarse and boisterous money-making fellow" who plans to "build a bank-wall under the hill on the edge of his meadow."<sup>17</sup> Accepting surveying as his business but stating also that he has chosen to pursue "certain labors which yield more real profit, though but little money," he realizes that he has been looked on as "an idler." It is only because his work has *not* been meaningless that he can declare with confidence, "I do not need the police of meaningless labor to regulate me." Many of his contemporaries "are no more worthily employed" than "in throwing stones over a wall, and then in throwing them back."<sup>18</sup>

Since Thoreau, on the other hand, had been running a surveying business, the question then becomes one of how this occupation is redeemed—how it is inherently different from the allegedly pointless exertions of so many of his countrymen. Among Thoreau's implicit rejoinders is the satisfaction he has derived from his work. The "slight labors" which afford him his livelihood and by which he is "to some extent serviceable" to his contemporaries, "are as yet commonly a pleasure" to him, and he is therefore "not often reminded that they are a necessity." While this thinly veiled admission that he enjoys fieldwork contradicts statements made in other moods, it is not the only hint in "Life Without Principle" that Thoreau had on some level accepted surveying, had reconciled it with his manner of living. After announcing his profession, he tells readers, "I am not without employment at this present stage of the voyage."<sup>19</sup>

Another stipulation made in the essay is that earning one's living should not be a full-time enterprise. Half a day's work, or irregular work, was plenty for Thoreau. His purposeful reduction of wants had reduced his need for self-sustaining labor, thereby partially preserving his autonomy. Full-time work would become "a drudgery," a selling of his birthright for a mess of pottage: "If I should sell both my forenoons and afternoons to society . . . for me, there would be nothing left worth living for."<sup>20</sup> While Thoreau put in many a full day of surveying fieldwork, the

intermittent nature of his business suited him well, as did the ability to use his time in the field creatively. Simply through temperamental self-adjustment in the field, Thoreau could observe nature, a skill that was after all undoubtedly enhanced by the long hours of perceptual practice he had while locating boundaries, and by the bodily knowledge of the land he had acquired while chaining, blazing and running line.

Finally, in this his most searching public analysis of the dangers of "getting a living," Thoreau is careful to contrast the predominantly economic motives of his clients to his own objectives. In doing so, he outlines a type of occupational integrity that is unique to land surveying but applicable in principle to all professions that partake of the profit motive:

That kind of surveying which I could do with most satisfaction my employers do not want. They would prefer that I should do my work coarsely and not too well, ay, not well enough. When I observe that there are different ways of surveying, my employer commonly asks which will give him the most land, not which is the most correct.<sup>21</sup>

In a striking reversal of capitalist paradigms, Thoreau avers that, to the extent that profit-greedy clients are satisfied, he is dissatisfied. His initial advertising claims of exactness in his work had assumed an overlap between the desires of his clients and the surveyor's desire for precision. Having discovered antagonisms between truth and profit, he severs the relation but retains the "satisfaction" derived from correct measurement. Referring to the copious engineering he had performed only for the sake of pure discovery or for what he calls "scientific, or even moral ends," Thoreau concludes that "the aim of the laborer should be, not to get his living . . . but to perform well a certain work."<sup>22</sup>

While Thoreau implicitly shifts the burden of environmental destruction to his surveying clients who have cut down the Concord woods, "making the earth bald before her time," he is acutely conscious of the ways he has abetted them. Perhaps in expressing these thoughts about his work, he remembers his advertising broadside, which had explicitly offered to lot off wooded property "distinctly and according to a regular plan." Now he is contemplating what he considers a failure in his actions—the living of an "unsatisfactory life, doing as others do"—but he reiterates a desire to follow the higher way—a route described as a "solitary path across-lots."<sup>23</sup>

health and happiness and inspiration and a hundred other far finer and nobler fruits than berries, which yet we shall not gather ourselves there, nor even carry to market."<sup>44</sup>

Here was richer material, more in character for the author of *Walden*. In Aesop's fable, a dog had slept in a hay manger and then prevented the returning cattle from eating the hay he now considered his own, though it was useless to the dog and needed by the cattle. Possession—especially when it is beyond basic needs or when it denies what is more necessary to others than to the possessor—is a dubious concept driven by base instincts. Clearly, Thoreau was thinking about more than blueberries. Perhaps his metaphor also comprised the valuable hay in the Concord River meadows, or the rights to the flow of the river that were appropriated by mill owners, or the timber in the woods he had lotted off for sale, or any and all of the commercial products of the landscape. By exerting the rights of possession, he realized, "we strike only one more blow at a simple and wholesome relation to nature."

From this platform, it is only a short distance to a rejection of all things owned, a moral that Thoreau does not overlook: "As long as the berries are free to all comers they are beautiful . . . but tell me that is a blueberry swamp which somebody has hired, and I shall not want even to look at it." The philosophical rub therefore lies in the act of laying claim to the produce of the land, in commodifying the "spontaneous fruit of our pastures." Setting up boundaries garners profit, but in keeping others out we hem ourselves in, inevitably lowering ourselves in the eyes of the community. "The berry party whom we turn away," Thoreau notes, "naturally look down on and despise us." The rally of negatives associated with the process of land enclosure culminates with the realization that a more natural ethics would have ignored such limitations: "If it were left to the berries to say who should have them, is it not likely that they would prefer to be gathered by the party of children in the hay-rigging, who have come to have a good time merely?"

Thoreau had made a living marking boundaries and transferring onto survey plats the lines dictated by man's law and ignored by nature's law. Having agonized over these processes for a decade, he knew what he was talking about when he lamented, "I do not see that these successive losses are ever quite made up to us. This is one of the taxes we pay for having a railroad." He had also learned, however, that property rights were

ineluctable in the American sociopolitical order, that dissociation from all forms of ownership and possession was a Sisyphean task, and that he was himself an economically constructed being. Looking on these truths dispassionately, he concedes that his fable of property rights in berries "suggests what origin and foundation many of our laws and institutions have" and ends his discourse with a poignant sense of resignation: "I do not say this by way of complaining of this particular custom. Not that I love Caesar less, but Rome more."<sup>45</sup>

Thinking of himself as Shakespeare's Brutus, whose conspiracy to murder Caesar exhibited a preeminent dilemma of divided political loyalties, Thoreau casts his own circumstances, and his self-positioning against them, as a soul-splitting problem of allegiance. Brutus's words to the Roman populace in Shakespeare's play had crucially addressed a question of loyalty, arguing fundamentally that violence toward Caesar was enacted in obedience to higher principles. Rather than diminishing his seditious deed, Brutus affirmed the more complicated verity that subversion of the state on one level, and adherence to it on another, could be contained in the same act. In the context of Thoreau's parable of property rights in berries, the plea underscores a similar duality in Thoreau's work and outlook.

The story of Thoreau the land surveyor is itself a kind of parable, a didactic narrative with strong contemporary relevance. In the winter of 1846, an emerging writer living in a cabin near Walden Pond carefully sounded the pond's depths and surveyed its frozen surface for the purpose of drafting onto paper a sublime three-dimensional microcosm. Realizing how well this image expressed his ethics and aspirations, he later inserted the unusual illustration in lithograph form into the text of his literary masterpiece. Processes of measuring and the data they generated were ultimately more than stages in the development of a lithograph—they were part of the genesis of his great book.

The author's initial decision to measure and plot the pond did not take place in a cultural vacuum. It was motivated in part by the Coastal Survey and its public descriptions of surveying as a national duty. A fascination with national surveying science was apparent in his book, where tropes for pond discovery both reflected and rewrote the justifications of the national survey as articulated by its charismatic superintendent and echoed in journalism of the period.

When the literary auteur's need to earn a living became an acute concern, he logically turned to surveying, something for which he had a natural talent and that put him where he wanted to be. But there were perils to hired work. Perambulating the petty boundaries of towns for money was not the same as sauntering in the woods and fields. A strict psychological separation of naturalist and businessman functions proved unworkable. Taming and changing the landscape, the surveyor feared, destroyed his perceptions of its wildness and vigor. Awakened to the purposes he had lent himself to, he inwardly rebelled. Clinging to a faith that measuring the natural world increased his understanding of it, he committed himself to a deeper-than-was-necessary knowledge of surveying, using his field notes to record environmental data and bringing astronomical science and compass bearings into his daily life as indicators of material and moral direction.

For years he wrestled with the consequences of serving Admetus, striving to atone for his subservience to an economic order he mistrusted. Uneasy with his compromises, he found inspiration in John Brown, who used surveying to fight evil. In making a public plea for the Kansas surveyor, the Concord surveyor extolled politically creative uses of the compass and chain, drawing on this aspect of Brown's identity—and his own—to further a discourse of revolution.

Not long after his declaration of support for the abolitionist surveyor, the man of Concord stood again before an audience, this time as a scientist and environmentalist-surveyor. Sharing his discoveries about the succession of forest trees, he displayed his own version of professional creativity, enabling him to take increased pride in his work. In the public eye and in the official census of his community, he no longer shunned self-identification as a surveyor. Simultaneously, he was becoming a surveyor where it mattered most—in the record of his inner life. When surveying notes became an important part his journal, it signaled that a discord among professional, political and private identities had been addressed. His last large measuring project, the Concord River survey, was as enthusiastically performed and spiritually motivated as his first, that of Walden Pond.

Just before he died, the surveyor composed documents that further defined the nature of his attachment to the compass and chain. "Life Without Principle" and "Walking" were conscience-driven commentar-

ies on the economically motivated persona he had assumed for over a decade. In these works, he drew clear distinctions between types of surveying and attested to his protracted struggle against his work's negative potential. His long-term inquiry into the meaning of his profession bore philosophical fruit that displayed a discernible reciprocity between the man and his measures. Woven inextricably into the fabric of his literary works is a deftly crafted, socially and politically significant, countercultural surveying treatise.

In "Resistance to Civil Government," Thoreau envisioned the result of undue respect for authority: the sight of men marching off to fight in wars they did not believe in. On a less lethal plane, Thoreau himself showed a form of "undue" respect for authority by making bounds and lending himself to environmental harm. He was aware that surveying potentially contradicted his ideals, and this knowledge disturbed him. "This process by which we get our coats is not what it should be," he wrote near the end of his life.<sup>46</sup>

In eulogizing Thoreau, Emerson expressed some regret that instead of "engineering for all America," his friend had chosen to be "the captain of a huckleberry party."<sup>47</sup> Thoreau's extensive surveying-related documents and commentaries argue that he did both. If he was often divided and ambivalent about how he made a living, it was because he had a muscular conscience and did not want to waste any part of his life. He tried hard to resist the almost ineluctable process of being spiritually reduced by the need to earn money. While he did not "transcend" the conditions of existence within his specific historical context, he did something inspirational by confronting and channeling the tension between getting a living and living by values—a tension we all encounter in some form.

How we respond to the dictates of conscience in our professional lives says a lot about us. Certainly, not all of us are able to choose jobs or follow lifestyles whose requirements are at every moment in perfect alignment with our deepest-held convictions. To the extent that we are divided about what society or the state makes us do, we are well equipped to understand Thoreau's surveying dilemmas. To the extent that our consciences are troubled by our tacit participation in environmental destruction, we recognize ourselves in Concord's surveyor.

Paradoxically, the "permanent" markers Thoreau left while survey-

ing in the Walden woods have disappeared,<sup>48</sup> while the literary legacy only partially comprehended at the time of his death endures. Early in his experience with surveying, Thoreau sensed the transitory nature of man-made boundaries, composing in his journal a passage that later became one of the culminating insights of "Walking": "These farms I have myself surveyed; these lines I have run; these bounds which I have set-up; appear dimly still as through a mist; but they have no chemistry to fix them; they fade from the surface of the glass."<sup>49</sup> As Thoreau seems to have predicted, the mounds of stone he left to mark lot corners in the Walden woods are gone, scattered back into the geology from which they were extricated. In surveying terms, Thoreau's "monumentation" is all but eradicated. Near the cabin site at Walden, however, there is another mound of stones, the memorial cairn that pilgrims to the pond have made into a monument that has lasted since 1872 and is still being added to.<sup>50</sup> There is undeniably a thought-provoking symmetry in the fact that some of the very stones Thoreau handled while surveying, stones which he knew to have profaned the wildness of Walden, have now found a more permanent home in the cairn memorial, venerating the writer and surveyor who counseled, "Enjoy the land, but own it not."<sup>51</sup>

## Notes

The standard text of Thoreau's journal is the Princeton University Press edition, abbreviated as *PJournal* below. Publication of the Princeton edition is in process and currently covers the years from 1837 to 1854.

Journal citations after 1854 appear below under the title *Journal* and refer to the 1906 edition edited by Bradford Torrey and Francis H. Allen.

### Preface

1. Thoreau, *Journal*, 10: 232 (31 December 1857).
2. Thoreau, *Journal*, 8: 319 (30 April 1856).
3. Thoreau, *Journal*, 10: 362 (7 April 1858).
4. Thoreau, *Journal*, 10: 232 (31 December 1857).

### CHAPTER I. The Surveyor and the State

1. Smith, 47.
2. Love, A2-A3.
3. Daniel, 53.
4. Linklater, *Measuring America*, 211.
5. Philander Chase, 179.
6. *Ibid.*, 161.
7. Even after his presidency, Washington continued to survey his own lands in a variety of ownership disputes. Five weeks before his death in 1799 he was rerunning the lines of his land in northern Fairfax County (Philander Chase, 181).
8. Washington to Jonathan Boucher, July 9, 1771, in *Washington Papers*, Colonial Series, ed. W. W. Abbot et al. (Charlottesville: University Press of Virginia, 1983-95), 8: 494-98, quoted in Philander Chase, 180.
9. Longmore, 108.
10. Cooper, 20, 21.
11. *Ibid.*, 288, 306.

## In Thoreau's Own Words:

From *WALDEN or Life in the Woods* by Henry David Thoreau, 1854, The Pond in Winter

### HENRY DAVID THOREAU

the narrow holes in the ice, which were four or five rods apart and an equal distance from the shore, and having fastened the end of the line to a stick to prevent its being pulled through, have passed the slack line over a twig of the alder, a foot or more above the ice, and tied a dry oak leaf to it, which, being pulled down, would show when he had a bite. These alders loomed through the mist at regular intervals as you walked half way round the pond.

Ah, the pickerel of Walden! when I see them lying on the ice, or in the well which the fisherman cuts in the ice, making a little hole to admit the water, I am always surprised by their rare beauty, as if they were fabulous fishes, they are so foreign to the streets, even to the woods, foreign as Arabia to our Concord life. They possess a quite dazzling and transcendent beauty which separates them by a wide interval from the cadaverous cod and haddock whose fame is trumpeted in our streets. They are not green like the pines, nor gray like the stones, nor blue like the sky; but they have, to my eyes, if possible, yet rarer colors, like flowers and precious stones, as if they were the pearls, the animalized *nuclei* or crystals of the Walden water. They, of course, are Walden all over and all through; are themselves small Waldens in the animal kingdom, Waldenses. It is surprising that they are caught here—that in this deep and capacious spring, far beneath the rattling teams and chaises and tinkling sleighs that travel the Walden road, this great gold and emerald fish swims. I never chanced to see its kind in any market; it would be the cynosure of all eyes there. Easily, with a few convulsive quirks, they give up their watery ghosts, like a mortal translated before his time to the thin air of heaven.

As I was desirous to recover the long lost bottom of Walden Pond, I surveyed it carefully, before the ice broke up, early in '46, with compass and chain and sounding line. There have been many stories told about the bottom, or rather no bottom, of this pond, which certainly had no foundation for themselves. It is remarkable how long men will believe in the bottomlessness of a pond without taking the trouble to sound it. I have visited two

236

### THE POND IN WINTER

such Bottomless Ponds in one walk in this neighborhood. Many have believed that Walden reached quite through to the other side of the globe. Some who have lain flat on the ice for a long time, looking down through the illusive medium, perchance with watery eyes into the bargain, and driven to hasty conclusions by the fear of catching cold in their breasts, have seen vast holes "into which a load of hay might be driven," if there were anybody to drive it, the undoubted source of the Styx and entrance to the Infernal Regions from these parts. Others have gone down from the village with a "fifty-six" and a wagon load of inch rope, but yet have failed to find any bottom; for while the "fifty-six" was resting by the way, they were paying out the rope in the vain attempt to fathom their truly immeasurable capacity for marvellousness. But I can assure my readers that Walden has a reasonably tight bottom at a not unreasonable, though at an unusual, depth. I fathomed it easily with a cod-line and a stone weighing about a pound and a half, and could tell accurately when the stone left the bottom, by having to pull so much harder before the water got underneath to help me. The greatest depth was exactly one hundred and two feet; to which may be added the five feet which it has risen since, making one hundred and seven. This is a remarkable depth for so small an area; yet not an inch of it can be spared by the imagination. What if all ponds were shallow? Would it not react on the minds of men? I am thankful that this pond was made deep and pure for a symbol. While men believe in the infinite some ponds will be thought to be bottomless.

A factory-owner, hearing what depth I had found, thought that it could not be true, for, judging from his acquaintance with dams, sand would not lie at so steep an angle. But the deepest ponds are not so deep in proportion to their area as most suppose, and, if drained, would not leave very remarkable valleys. They are not like cups between the hills; for this one, which is so unusually deep for its area, appears in a vertical section through its centre not deeper than a shallow plate. Most ponds, emptied, would leave a meadow no more hollow than we frequently see. William Gilpin, who is so admirable in all that re-

237

## Thoreau Resource Links:

### See Thoreau's Surveys

[http://www.concordlibrary.org/collect/Thoreau\\_surveys/Thoreau\\_surveys.htm](http://www.concordlibrary.org/collect/Thoreau_surveys/Thoreau_surveys.htm)

An amazing resource. Don't miss this link.

### The Thoreau Society

<http://www.thoreausociety.org/>

### Concord Museum, Thoreau Collection

[http://www.concordmuseum.org/explore/thoreau\\_collection.html](http://www.concordmuseum.org/explore/thoreau_collection.html)

### *Thoreau The Land Surveyor*

Chura, Patrick. *Thoreau The Land Surveyor*. University of Florida Press, 2010.

Available for purchase through The Thoreau Society, Shop at Walden Pond:

<http://www.shopatwaldenpond.org/SearchResults.asp?Search=land+surveyor&Search.x=11&Search.y=10>

### Review of *Thoreau The Land Surveyor*

<http://peacecorpsworldwide.org/pc-writers/2010/12/08/review-4/>

### Magazine Articles about Thoreau (Professional Surveyor and POB)

<http://www.profsurv.com/magazine/article.aspx?i=70786>

[http://www.pobonline.com/Articles/Features/BNP\\_GUID\\_9-5-2006\\_A\\_1000000000000873766](http://www.pobonline.com/Articles/Features/BNP_GUID_9-5-2006_A_1000000000000873766)

<http://www.profsurv.com/magazine/article.aspx?i=70164>

+++++

**Perhaps of Further Interest:**

**Notable Surveyors:**

<http://www.surveysinc.com/history/surveyors.html>

Food for thought and for future study: [David Rittenhouse](#), [John Charles Freemont](#), [Joseph Ellicott](#), [Thomas Hutchins](#), [Verplanck Colvin](#), [Daniel Boone](#), [Edmund Gunter](#)  
John Armstrong, Henry Bouquet, Others TBA

**Surveyors Historical Society:**

<http://www.surveyorshistoricalsociety.com/>

**Virtual Museum of Surveying:**

<http://www.surveyhistory.org/>

**Smithsonian Collection:**

<http://americanhistory.si.edu/collections/surveying/>

**History of the Rectangular Survey System:**

[http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS\\_REALTY\\_AND\\_RESOURCE\\_PROTECTION/\\_W0350/cadastral\\_pdfs.Par.13270.File.dat/histrect.pdf](http://www.blm.gov/pgdata/etc/medialib/blm/wo/MINERALS_REALTY_AND_RESOURCE_PROTECTION/_W0350/cadastral_pdfs.Par.13270.File.dat/histrect.pdf)

**Books**

***The Chainbearer*, by James Fenimore Cooper (1845)**

[http://books.google.com/books?id=FyKRAAAAYAAJ&printsec=frontcover&dq=the+chainbearer&hl=en&ei=n6T2TMiXIYO78qb66MzyBg&sa=X&oi=book\\_result&ct=result&resnum=1&ved=0CCMQ6AEwAA#v=onepage&q&f=false](http://books.google.com/books?id=FyKRAAAAYAAJ&printsec=frontcover&dq=the+chainbearer&hl=en&ei=n6T2TMiXIYO78qb66MzyBg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CCMQ6AEwAA#v=onepage&q&f=false)

Baber, Adin. *Abraham Lincoln with Compass and Chain*. 1968

Available as Reprinted by the Illinois Professional Land Surveyors Association, Annotated and Updated by Robert E. Church, Executive Director

Bedini, Silvio A. *With Compass and Chain: Early American Surveyors and Their Instruments*. Frederick, Md.: Professional Surveyors Pub. Co., 2001.

Hughes, Sarah S. *Surveyors and Statesmen: Land Measuring in Colonial Virginia*. Richmond, Va.: Virginia Surveyors Foundation, 1979.

+++++