THE American Surveyor
A ...The Past... An Eye To The Future
Jan/Feb 2007
Compleatly Surveying
NGS Anniversary
Coast & Geodetic Survey celebrates 200th
The Art of Software
A visit with the founder of Carlson
Acres of Maps
USGS Mapping Center in Denver

Compleatly Surveying at Mount Vernon

On a recent fall weekend, a cluster of land surveyors gathered at the long time residence of the father of our country and one of the fathers of American surveying. On October 27, 2006, a dedication ceremony was held at Mount Vernon, Virginia sponsored by the Mount Vernon Ladies Association, the conservators and keepers of Mr. and Mrs. Washington's home of 45 years.

We gathered in response to a call to all surveyors interested in our profession's history in order to celebrate a major renovation and additions (about 112 million dollars' worth) to the grounds of Mount Vernon. Since the acquisition by the Ladies Association in 1858, Washington's Mount Vernon home has been the main focal point of a visit to this beautiful spot on the western bank of the Potomac River, while Mr. Washington himself was for the most part overlooked. As of the last week in October, however, current visitors to Mt. Vernon now have the opportunity to learn of the Washington family as living and breathing individuals, sans the mythology.

The impact of the renovations is utterly astounding. Improvements are all underground, carefully designed and

>> By C. Barton Crattie, LS

Displayed with permission • *The American Surveyor* • January/February • Copyright 2007 Cheves Media • *www.TheAmericanSurveyor.com*

Author Bart Crattie makes a sight.

Displayed with permission • *The American Surveyor* • January/February • Copyright 2007 Cheves Media • *www.TheAmericanSurveyor.com*

Brothers of the chain (L-R): Robert Cagle (TN), Mike Bazis (MD), John Bueche (MI), Jack Owens (MI), Dave Ingram (VA), Ken West (TX), Bart Crattie (GA), Chas Langelan (MD), Neal Isenstein (DC). and Butch Miller (MI) gather at the dung repository (see sign).

constructed not to disturb the pastoral beauty of the estate. Following a visit to the informative Ford Orientation Center, the next stop is the Donald W. Reynolds Museum and Education Center. Upon entry, a high-tech rendition of Washington's face gazes directly at you, no matter your location. Most striking at the new education center are three forensically correct lifelike figures of Washington that have been assembled by a skilled team of doctors, artists and other experts in anatomy and the human figure. Mr. Washington has been brought to life, with hair, skin, clothing, tools, surroundings, animals, sounds and other effects necessary to make the viewer believe he or she is standing with the young 19-year-old George out in the woods on a Virginia frontier survey; watching the 45-year-old General Washington commanding the army of our young country pass astride a white steed; or being witness to the 57-year-old Mr. Washington at his inauguration, becoming our first President.

Surrounding these remarkable scenes are a number of equally remarkable galleries, theaters, displays and exhibits touting the lives of the Washingtons. Computer monitors and a well-produced film document the mechanics of the construction of the three Washington figures. Other gallery spaces contain both common and unusual artifacts of the lives of Mr. and Mrs. Washington. One item that is somewhat overlooked in our history, but made quite clear at the Education Center, is that by being in the wrong place at the wrong time young Major Washington witnessed and quite possibly provoked the initial conflict leading to the French and Indian (Seven Years) World War. Other highlights are a five million dollar multi-media production of the General's three major victories during the Revolution. While crossing the Delaware, a snow making machine actually showers the interior of the theater with a dense snowfall. There is a reflective area that definitively shows the impact religion and the belief in God played in Mr. Washington's life. One can walk through their elaborate dining room as well as contemplate the horror of and day-by-day fact of slavery in the 18th century. There is a gallery devoted to colonial dentistry with the president's actual set of ivory (not wooden) dentures prominently displayed. If you wish, you can place your hand on a Bible and take the oath of office (try it sometime – it is a wake-up call). Finally, the visitor can witness the quite brief period the Washington couple were finally shed of

"Besides the many Profits this Art brings to Man, it is a Study so pleasant, and affords such Wholsom and Innocent Exercise, that we seldom find a Man that has once entred himself into the Study of *Geometry* or *Geodaesia*, can ever after wholly lay it aside..."

– from Love's *Geodaesia*

Early morning visitors arrive at surveyor Washington's home high above the Potomac on the day of the dedication of the new facilities.

public life and able to enjoy their twilight years at their beloved Mount Vernon.

Whether one has an interest in history or surveying, every citizen should visit Mount Vernon. It is an encapsulation of our early country, culture, religions and the other unique items that make such a diverse people united as we truly are in our United States.

So, just how much surveying did young George do? To be brief: just enough. Unbeknownst to a portion of the land surveyors today, our profession is generally held in high esteem along with physicians, attorneys, accountants, architects and other learned trades. In the 18th century, this fact was understood by all. The decision by the 15-year-old George to become a surveyor of property was definitely made with the advancement in social standing a major consideration.

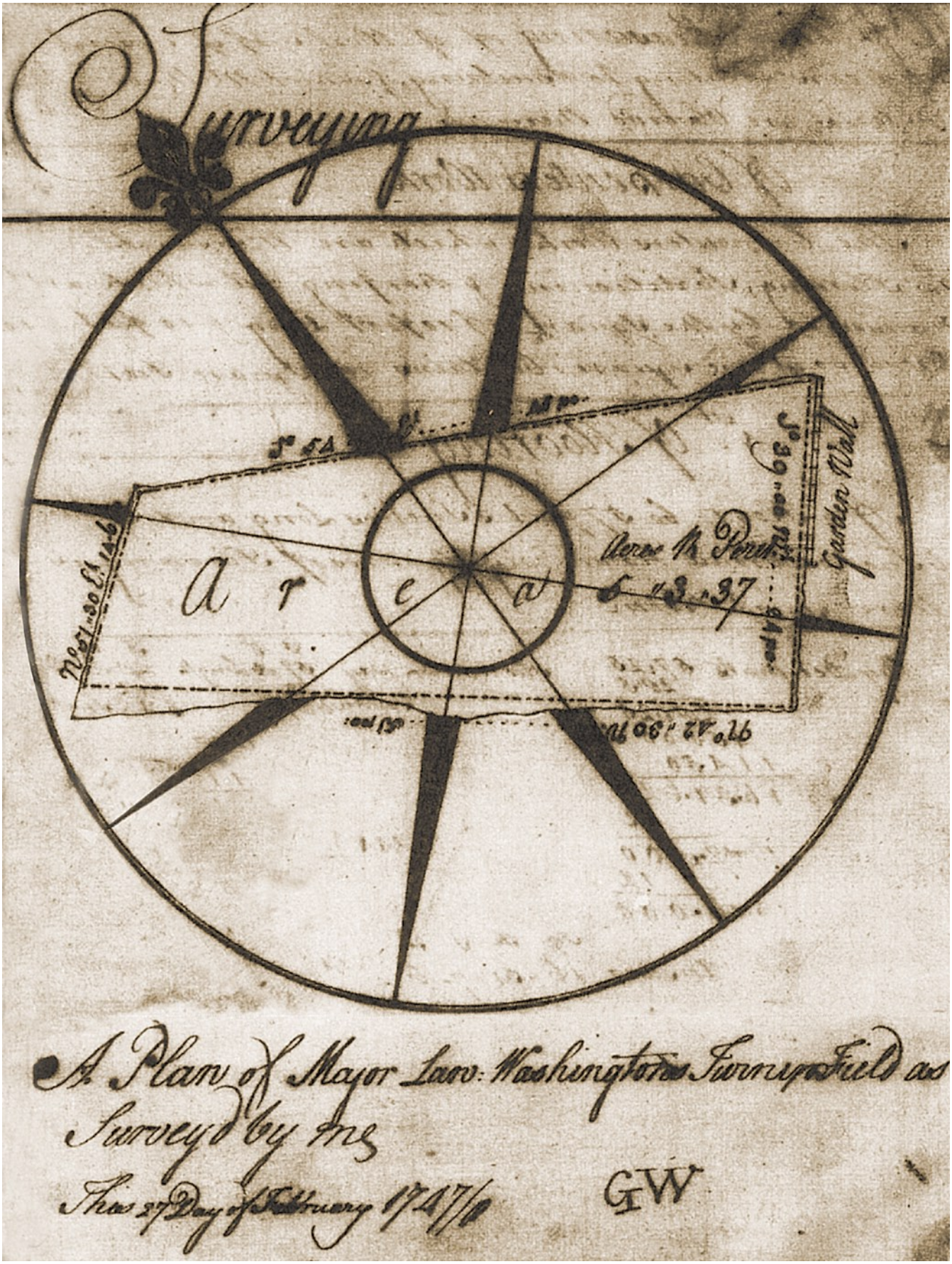
Young George had basically the same early education that all affluent young folks did at the time. One was exposed to geometry, decimals, measurements and volumes as well as a short set of lessons in surveying for the layman. He later studied Love's *Geodaesia* and Leybourn's *The Compleat Surveyor*. His older half-brother Lawrence (the proprietor and "namer of" Mount Vernon) originally encouraged the youth to go into the King's navy. Thoughts of being

"With lead from a round ball...SouthWest 48 degrees, 3 chains, 18 links"

whipped "like a dog" seemed to have persuaded young George to pursue the proud profession of surveying. Though not a documented fact, it is believed he took over his deceased father's compass, chains and Jacob's staffs found in a shed at the family home place of Ferry Farm, Virginia. Beginning at 15 years of age, George did some practice surveys around Lawrence's plantation. One performed two weeks after his 16th birthday is of a small portion of Mount Vernon. The drawing for this survey is both quite beautiful and unique in that he superimposes a compass rose over "Major Law. Washington's turnip field". Throughout his career, he would add curiously beautiful embellishments to his drawings until he finally became far too busy and had no time for such frivolities (sound familiar?).

Young George pulled a few strings and with the support of the wealthy Lord Fairfax obtained the surveyorship of Culpepper County, Virginia at age 17. This was important in two respects: it was his first experience serving in a governmental capacity, and it is the first notable accomplishment he has made on his own.

S.C.C. (Surveyor of Culpepper County) Washington performed only one survey in Culpepper County. But it was the unmapped ground that truly caught his fancy. Venturing beyond the Blue Ridge he became somewhat captivated by the Shenandoah Valley. No hardships were too great to discourage him from making a very good living in such a beautiful and valuable area. He liked it so much he bought some property. Over the following years, he crossed the next chain of mountains (the Appalachians) and purchased and/or optioned some substantial tracts that were currently merely being hunted upon by savages.



This practice survey performed by young Washington (2 weeks into his 16th year) is on display within the Education Center.

Displayed with permission • *The American Surveyor* • January/February • Copyright 2007 Cheves Media • *www.TheAmericanSurveyor.com*

Left: Virginia surveyor David Lee Ingram adjusts one of the many period instruments he provided for the demonstrations.

Below: There was plenty of equipment and expertise available for the public's consumption.

How long did he survey? Again, just long enough. More expedient things like tending to massive land holdings and threats of French incursions into Ohio lands distracted soon-to-be Major Washington from his duties as a measurer of ground. A neighbor named Lee took over the surveyorship of Culpepper County in 1750. Though not proven, it is said that from then until 1753 (when he ceased earning his career as a surveyor) his surveys might have been done without benefit of Burgess recognition (surveying without a license). Whatever the case, Washington's formative years included Rittenhouse, Gunther and Jacob. Washington's ambition caused him to successfully pursue other careers. However, he never ceased surveying property. The winter of 1799 found a 67-year-old George Washington participating on a survey that eventually lasted three days and nights mere weeks before his passing.

Today's American surveyor holds in common with Mr. Washington something far more important than measuring tools and principles. There is an aspect to the "surveyor" we share beyond these. If anyone reading this has been in practice for, say, more than 15 minutes, then he or she is no doubt conscious of a concept known as integrity. Mr. Washington understood this like any and all serious surveyors do. He parlayed this character trait into the supreme generalship of a young, impetuous country and the first presidency of that country all to the benefit of the United States. George Washington's and Abraham Lincoln's honesty are stuff of legend. Both were land surveyors.

Colleagues, pat yourselves on the back, you are in good company.

Visualize this: you, with compass and chain on the lawn of one of the grandest mansions in all the country, beneath the soaring wings of two bald eagles, surrounded by the golds, reds, oranges, yellows and greens of a waning summer. A dash of spitting rain, the breeze coming off the Potomac, and then the sun breaks out from the clouds. For two wonderful days, it shined on some colonial surveyors working in the 21st century. The gentlemen that participated

One of the three forensically correct figures of Washington within the Education Center. This one depicts him at 57 years old on the verge of becoming the first President of the United States.

came from some states that didn't exist during the times of Mr. Washington's Mount Vernon residency – Texas, Tennessee, Michigan, and Georgia, along with the colonies of Maryland and Virginia, and even the federal city – were all represented. What did we do? We did what we all love to do and we seriously infected quite a few members of the general public.

I would like to thank Roger Woodfill and the Surveyor's Historical Society, and most especially David Lee Ingram for the loan of the many compasses and chains used in our display and demonstrations. Any layman by actually studying an 18th-century survey plat, pointing and sighting a compass on a given bearing, then seeing a two-pole chain stretched out, counting 10 chaining pins, and then seeing 16 talleys left our encampment quite enlightened in techniques of the 18th-century surveyor.

It was such a privilege to represent our profession on George Washington's very lawn, accompanied by fellow land surveyors. Sharing our knowledge and experiences in combination with true hands-on captivated many of the visitors. One of the visitors tuned out to be the son of the fellow that was the president of the W. & L.E. Gurley Company at the time of its sale. Eight to eighty, male or female, there were a surprising number of folks genuinely interested in surveyors and surveying. I remember one lad who wandered up with his mother. Neither knowing what the future will bring for him, something clicked and I witnessed excitement as they observed and held the chains, sighted compasses, read directions and studied the field notes and plats.

I would drive to Atlanta, Georgia, pay massive amounts for long term parking, ride an Amtrak train (coach) for 14 hours, rent a car and negotiate Washington, D.C. traffic, reside in a motel with bad coffee, take a train (coach) back for 14 hours and return from Atlanta one thousand times over to get the opportunity to see the look of interest and desire that was in the eyes of that young lad and his mother. By golly, George Washington and some devoted friends sure have recruited a good one there.

With compass and chain, three reenactors measure the permanent five-sided course set up at Mount Vernon for Scouts to run in order to achieve a special locally-issued badge.

Author's Notes: For more information about Mt. Vernon's new education center, visit *www.mountvernon.org.*

The Surveyor's Historical Society will be working in conjunction with the National Park Service in September 2007 to celebrate Virginia's 400th birthday and George Washington's 275th birthday. The festivities will take place in the latter part of September and will be held in and around Westmoreland State Park, Virginia. Contact *shs9@earthlink.net* for more information.

Bart Crattie is a life member of the Surveyor's Historical Society and President of Niles Surveying Co., Inc. in Chattanooga, Tennessee.