

Drawing the Line

a brief History of the Mason-Dixon Survey, 1763-1769

The Men

Charles Mason was born at Wherr in the parish of Bisley, Gloucestershire, in the early part of 1728. He was baptized at Sapperton Church on 1 May 1728. His father, also Charles, was a miller and baker. It is not known where Charles Mason, the astronomer, received his early training, but he may have been a scholar at Tetbury Grammar School and perhaps at the Naval Academy at Gosport.

In 1756, Mason was appointed Assistant Observer at Greenwich Observatory and he continued to work there until 1760.

Mason's first wife, Rebekah, died on 13 Feb. 1759 at Greenwich, leaving two sons – William C. and Doctor Isaac. He remarried after his return from his “restless progress in America.” Mary, his second wife, was a sister of Robert Williams, a schoolmaster at Tetbury in Gloucestershire. Mason and his wife were living with Williams a few months before the birth of their first child.

Mason's work for the Board of Longitude in the 1780's was casual employment and it is apparent that he was finding it increasingly difficult to support his wife and a large family of eight children by 1786. This may have induced him to emigrate to America, as the new country seemed to offer more opportunities for him and his sons.

Mason arrived in Philadelphia with his whole family, but suffered from an illness which overtook him on his voyage to America. He died on 25 October 1786. He is said to have been buried in the Christ Church Burial Ground, although the grave is unmarked. and its exact location unknown.

This brief history of the Mason-Dixon survey was compiled by Gail M. Pietrzyk for the 300th anniversary of the Nottingham Lots, 2001.

Jeremiah Dixon was born at Bishop Auchland on 27 July 1733. His father was George Dixon of Cockfield (1701-1756) who owned and operated a coal-mine. The family of Dixon, Quakers in Durham County was an extensive one; it was a branch of the Longstaffs (Langstaffs) of Teesdale. Jeremiah received his early education at John Kipling's school at Barnard Castle and it was here that her first became interested in mathematics and astronomy. His mother, Mary Hunter, who was said to have been the ‘cleverest woman that ever married into her husband's family’. Studious to a degree, Jeremiah preferred to consider himself self-educated. When asked where his seat of learning was, he exclaimed ‘a pit cabin upon Cockfield Fell’. From the time he left school until 1760 he must have had some training in practical surveying work, for he afterwards adopted this work for his profession. At a very early age he made the acquaintance of many eminent men. It may have been John Bird who recommended Dixon to the Royal Society as a suitable companion to accompany Mason to observe the transit of Venus at Capetown, in 1761.

Dixon was a surveyor of outstanding merit and a good draughtsman. Among other places which he surveyed and measured was Lanchester Common or Moor, the largest in the County of Durham.

Jeremiah Dixon, a bachelor, died at Cockfield on 22 January 1779 and was buried at the Friends Buriel Ground, Staindrop, in County Durham.

Extracted from Thomas D. Cope and H. W. Robinson, “Charles Mason, Jeremiah Dixon and the Royal Society,” *Notes and records of the Royal Society of London*, volume 9, October 1951, pp. 55-78. excerpt from pp. 76-78.

The Mission

On November 15th, 1763, Charles Mason and Jeremiah Dixon arrived in Philadelphia with instructions from the Royal Society. Their errand in America was expected to provide a solution for disputes on boundary lines which had been an issue for 80 years and more between the aristocratic family of the Penns and the noble family of the Calverts, Lords Baltimore.

The grant to Baltimore on June 20, 1632, described the territory running from Cape Hinlopen (now Fenwick Island in the Atlantic Ocean), limited to the north by the 40th parallel of Latitude and running from the Delaware River and Bay Westward to the headwaters of the Potomac River.

George Talbot, of Susquahanna Manor, a kinsman of Lord Baltimore, and a dashing and notorious adventurer along the upper reaches of the Chesapeake, claimed a territory along the 'Talbot Line', a rude boundary marked only by blazed trees, in 1683.

After the conference of 1685 determined that the provinces on the Delaware belonged to William Penn because Lord Baltimore's patent was for "uncultivated land" whereas the land in dispute was inhabited by Christians before the date of the Maryland patent. The northern boundary line was far from settled although the committee is said to have favored the fortieth degree of latitude.

William Penn's action in granting the Nottingham Lots in the northern part of the County below the fortieth parallel to some of his devoted followers did not help the sentiment regarding the boundary difficulties, nor did his grant of land to a company of Welsh Baptists in the vicinity of Iron Hill in the northeastern part of the County. It was supposed, and with very good reason, that these grants were made for the purpose of helping to establish land claims.

The dispute about the boundary line dragged on, aggravated by border troubles. Stringent commands from the King brought Lord Baltimore to a compromise. According to an agreement signed May 4, 1738, a temporary line

was to be drawn beginning on the east fifteen and a quarter miles south of the parallel of Philadelphia to a point on the west side of the Susquehanna fourteen and three quarter miles south of the same parallel, thus settling the limits of both Provinces until the final determination of the boundary. It was not until 1768 when Mason and Dixon finished their work that the northern boundary was finally fixed.

The Map

The "true and exact plan" which the joint commissioners of Maryland and Pennsylvania in their report of November 9, 1768, declared that they had signed and sealed was a map of considerable magnitude. It is believed that it was of Mason's and Dixon's original designing, and that the two astronomers collaborated closely upon it, with Dixon, who had been from early years, "good draughtsman," probably doing the lion's share of the drawing.

The depiction of the West Line names no person and no building except one Quaker Meeting House at crossroads on the Maryland side of the 10th mile boundary stone.

P E N N S Y L V A N N I A

M A R Y L A N D



A SCALE OF MILES

Explanation

- A. All Appointed Surveyors of the Proprietary
- B. All Appointed Surveyors of the Province
- C. All Appointed Surveyors of the Counties
- D. All Appointed Surveyors of the Towns
- E. All Appointed Surveyors of the Parishes
- F. All Appointed Surveyors of the Precincts
- G. All Appointed Surveyors of the Wards
- H. All Appointed Surveyors of the Liberties
- I. All Appointed Surveyors of the Hamlets
- J. All Appointed Surveyors of the Villages
- K. All Appointed Surveyors of the Parishes
- L. All Appointed Surveyors of the Precincts
- M. All Appointed Surveyors of the Wards
- N. All Appointed Surveyors of the Liberties
- O. All Appointed Surveyors of the Hamlets
- P. All Appointed Surveyors of the Villages
- Q. All Appointed Surveyors of the Parishes
- R. All Appointed Surveyors of the Precincts
- S. All Appointed Surveyors of the Wards
- T. All Appointed Surveyors of the Liberties
- U. All Appointed Surveyors of the Hamlets
- V. All Appointed Surveyors of the Villages
- W. All Appointed Surveyors of the Parishes
- X. All Appointed Surveyors of the Precincts
- Y. All Appointed Surveyors of the Wards
- Z. All Appointed Surveyors of the Liberties

THE PROVINCE OF MARYLAND

THE THREE LOWER COUNTIES



A Scale of Miles



Handwritten notes and signatures at the top of the page, including names like "John Smith" and "James Brown".

The Method

Mason and Dixon set up observatories every five miles, taking a number of different observations on a number of different stars, and computing the precise latitude and longitude of each observation, used the mean of all of them to determine precisely the location of each observatory. With these scientific data they then marked the boundary line in accordance with the Court decisions and agreements between the Proprietors. Their line ran due West across the Susquahanna River and the Alleghany mountains to an Indian trail leading to Fort Duquesne. At this point the Indians refused to permit the line to be run further West. Mason and Dixon stopped at the Indian Trail and the final twenty miles of the Westward line was run later by other survey-



Picture of Gunther's half-chain, the type used by Mason and Dixon. From *The Mason and Dixon Line: Story for a Bicentennary 1763-1963*.

April, 1765. On the fifth on the month Mason and Dixon proceeded to run the West Line, using for the first 10-minute arc of the great circle a direction determined by calculations of spherical trigonometry and observations referred to above. Their measurements were from a "Post marked West" in Mr. Byran's field, which in latitude was 15 miles south of the southernmost point in Philadelphia, and later turned out to be 2 miles 79 chains 27 links east of the northeast corner of Maryland. The survey proceeded westward, crossing the Little Christiana Creek, Great Christiana Creek and the Elk River. On the thirteenth a point had been reached near the end of the 10-minute arc of great circle, i.e., at 12 miles 25 chains from the point of beginning. At this time the scientists returned to the end of the line and came back with the astronomical transit or sector. The following day they set it up at the point reached on the thirteenth, to obtain a check on its latitude. The mean of the observations showed that the position of the sector was 1.29 seconds of arc north of the parallel through the Post marked West. A table of offsets was now prepared which took into consideration the distance of the great circle southward to the parallel and also the amount (129 feet) by which their line had erred from the desired great circle. The calculated offsets were measured off from the great circle by returning eastward and a temporary monument was placed at every mile point. The positions marked the true boundary between Maryland and Pennsylvania. On the twenty-ninth of the month they proceeded to repeat the procedure, i.e., to run a second arc of great circle of 10-minute length. The following day they crossed the main branch of the North East Riber at a distance of 14 miles 2 chains from the Post marked West. At this time communications were dispatched to the commissioners from Maryland and Pennsylvania to inform them that the survey would reach the Susquehanna River in twelve days.

May, 1765. The line was continued without interruption for nearly two weeks, during which time the route crossed the Octoraro River three times in quick succession. The river was very sinuous but each crossing was nearly perpendicular to its banks. The three crossings respectively began at 20 miles 61 chains, 20 miles 71 chains, and 21 miles 25 chains, and the width of the river was recorded by Mason as about 50 yards. Conowingo Creek was crossed at 23 miles 67 chains, and at a distance of 25 miles 75 chains 57 links the end of the 10 minute arc of great circle was approximately reached ...

From The Journal of Charles Mason and Jeremiah Dixon



Telescope made by John Bird, c. 1769. from *The Mason and Dixon Line: Story for a Bicentenary 1763-1963*.