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Mason & Dixon: their Line and its Legend  
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Lines on maps may be drawn by engineers, but they are interpreted by political events. Seldom has history recorded an amicable and abiding acceptance of such demarcations when they involve restless dynastic movements, whether the example be Pope Alexander VI's division of the New World in 1493 between Spain and Portugal, or the twentieth century's unhappy establishment of the border between East and West Berlin after World War II. The surveyor's work becomes a symbol, and his name may become a catch phrase for a congeries of political and social issues of which he never dreamed.

The prime illustration of such an event in the United States is the line laid out for a total of about 332 miles by two English astronomer-surveyors between 1763 and 1767, to settle a dispute between the Perms and the Baltimores. For more than eighty years these powerful proprietaries had contended over the precise location of their common border. When they finally settled upon these two scientists to direct an impersonal, mathematically dependable survey, they set the stage for an engineering feat of impressive dimensions for that time.

But Charles Mason and Jeremiah Dixon were destined to be remembered for their substantial engineering and scientific accomplishments only in the annals of specialists. Mason, among other things, later completed a catalogue of 387 stars, which, when incorporated into a nautical almanac published in 1787, became the standard authority on the subject for a number of years. Dixon, a county surveyor and amateur astronomer, was considered sufficiently adept in his field to be elected to the Royal Society. He took part in several overseas scientific expeditions for the Society."

For considerably more than a century, however, what the average American has understood by the Mason-Dixon survey has been a figurative division between two frames of reference in national life. Just as the South—and, for that matter, the North—tended to become a state of mind, so the Mason-Dixon Line has come to be viewed only incidentally as a real border and more as a line of transition between these two states of mind. In the national psychology it is thought of as a jagged extension of the border between Pennsylvania and Maryland to some vaguely defined point on the Missouri-Kansas border.

Just when this popular concept first took shape is not easy to say. Obviously, as sectional consciousness in the matter of slavery increased in the first half of the nineteenth century, the fact that Maryland, the most northerly slave state, was divided from Pennsylvania's free soil by the Mason-Dixon survey impressed itself upon the public mind. The Ohio River, as the border between the southern state of Kentucky and the Northwest Territory,

where slavery was prohibited, was a natural landmark extending the symbolism of the Mason-Dixon Line, the western terminus of which lay close to that great waterway to the West. Finally, the Missouri Compromise, fixing the northern limit of slave territory at latitude 36 degrees 30 minutes north, westward from the Ohio's juncture with the Mississippi, completed the popular image.

The issues which thus developed in the nineteenth century around Mason and Dixon's survey, and made their names a household phrase, have largely obscured the significant political and scientific results of the original project. That project—a border settlement of the eighteenth century—in turn traced its beginnings to issues which arose in the seventeenth century, and even earlier. The problem really started with England's belated decision to launch her own colonizing efforts in the New World, where Spain and Portugal had long preceded her and where she now found the Netherlands, Sweden, and France in close competition.

Sir Walter Raleigh made the first colonization attempt at Roanoke Island in 1585. After failure of this effort the Virginia Companies of London and Plymouth were chartered, and founded the first two permanent English settlements—at Jamestown in 1607, and at Plymouth in 1620. Unfortunately, James I fixed the northernmost limit of the London Company at latitude 41 degrees north and the southernmost limit of the Plymouth Company at 38 degrees north—an overlap that included more than half of what is now Pennsylvania and New Jersey, and all of Maryland. Within this overlapping area, however, neither company was to settle within 100 miles of the other. This arrangement did, in fact, avoid most arguments between the first and second English colonies; but it multiplied the difficulties for those who came after and settled in between.

One of these was George Calvert, the first Lord Baltimore, whose Maryland charter was granted in 1632. In the course of the next fifty years his heirs were able, in various ways, to overcome claims made by the Dutch, the Virginians, and the Swedes. But the real trouble began only after Charles II's grant of Pennsylvania to William Penn in 1681, and a subsequent grant to Penn by James, Duke of York, of land extending south as far as Chesapeake Bay.

Territorial assignments in seventeenth-century charters were vague, and the technical capacity for accurate fixing of boundaries in the unsettled wilderness was extremely limited. Local surveyors had no particular difficulty in laying out sites for towns and individual plantations. There was a political as well as a surveying problem involved, however, in determining the point described in the Maryland charter as its northern boundary—"that Part of the Bay of Delaware on the North, which lieth under the Fortieth Degree of North Latitude, where New England is terminated."

The fortieth parallel would have put Maryland's northern border somewhere within the present city of Philadelphia. When Penn's grant was made in 1681, Charles Calvert, third Lord Baltimore, insisted that his own prior charter should be interpreted literally. Not so, said Penn's party; the original intent of the Maryland charter was to put the border "under" the fortieth parallel—how far "under" being the point at issue. The vicinity of the

fortieth parallel was not unacceptable for the main boundary line, but at its eastern end a vital problem arose. A few miles up or down the Delaware estuary could insure or deprive Pennsylvania of a harbor of enormous commercial potential. In addition, there was the question of which colony was entitled to collect taxes from the settlers within the disputed zone. Bitterly but steadily over the years, the Calverts retreated or were pushed southward from their charter position, particularly in the region of Delaware Bay.

Three times—in 1685, 1732, and 1750—the boundary controversy was adjudicated in England by agencies of the Crown. The upshot was that, by 1760, the Penns' proprietary was held to include roughly half of the northern part of the Delmarva Peninsula, separating Chesapeake Bay from Delaware Bay. It was to include, that is, the area now forming the state of Delaware, but at that time known as the “lower counties” of the Penn domain, or simply as “the counties of Delaware.”

Determination of their exact boundaries, however, was a prickly matter. The British Court of Chancery had ruled that the Delaware southern border should be a transpeninsular line extending westward from Cape Henlopen—as that point was indicated on contemporary maps. It turned out that the maps showed the Cape too far south by as much as twenty-two miles; but the Court was stubborn, and the transpeninsular line separating the Penns from the Calverts was drawn accordingly, to the detriment of the Culverts. The northern boundary of the Delaware counties—which had acquired a form of home rule while remaining within the Penn proprietary—was to be determined by the arc of a circle twelve miles in radius, with its center at New Castle Court House (now New Castle, Delaware).

But the final step—determining the Delaware western border—required the connecting of the midpoint on the transpeninsular line with a tangent point on the arc. The nice astronomical and mathematical steps needed to connect these points proved too much for the colonial commissioners charged with the survey. In 1761, after several months of clearing a line through the wilderness, Thomas Penn's commissioners were compelled to advise him that there had been some basic astronomical miscalculations and “the business set back almost as far as ever.” The trouble started, said the commissioners, with a survey telescope that had gone awry; after that everything went wrong.

The telescope “being extended and fixed on a strip of wood ... after being exposed to a Shower of Rain they perceived the Strip had warped & the Glass did not represent Objects precisely in the places they possessed.” Apparently the Penns, accustomed to the considerable scientific sophistication of mid-eighteenth-century England, could not at first believe that the colonials were incapable of handling the problem. A letter from Dr. John Robertson, master of the Royal Naval Academy at Portsmouth, however, assured them of its difficulty and of the need for competent instruments competently used. Added to this was the prospect that erroneous surveys could run into money: as one Pennsylvania commissioner wrote Thomas Penn in 1763, if local scientists surveyed the border, “and if afterwards on Examination of the Work by Mathematicians in England it should be pronounc'd wrong, can Lord Baltimore take advantage of this, set it aside and procure an order to do it over again?”

The obvious solution was “to send over from England some able Mathematicians with a proper set of Mathematical instruments.” These persons, in addition to their scientific competence, were to be “of Great Integrity and totally unbiassed and unprejudiced on either side of the question.” Eighty years of argument had crystallized the Penns’ and Calverts’ mutual distrust of each other. Apparently the nomination of the qualified “mathematicians” was solicited from the Astronomer Royal, Charles Bradley, director of the Greenwich Observatory, and his successor, Nathaniel Bliss.

The Astronomer Royal, it happily developed, had the men and the instruments for the job. Charles Mason had been assistant observer at Greenwich from 1756 to 1760, during which time he had worked closely with Bradley on a monumental catalogue of positions of the moon, and on the designing of improved instruments for astronomical observations. And Jeremiah Dixon had early shown enough mathematical precocity to bring him to the attention of John Bird, the creator of many astronomical instruments at Greenwich and a member of the Royal Society. Dixon was described to Penn as a competent surveyor from Durham County, England.

In 1761, England and several leading continental powers had joined in an international scientific project—securing data from more than a hundred points in Europe, Africa, and the Far East during the transit of Venus across the face of the sun, in order to determine more precisely the mean distance between earth and sun. Mason and Dixon drew an assignment to proceed to the island of Sumatra and make observations. A French man-of-war interfered with their sailing schedule, however, and they were able to get only as far as the Cape of Good Hope by the date of the transit. Even so, their observations from that point were praised more than a century later by a scientist at the United States Naval Observatory as being among the most accurate of the whole project.

When in 1762 the two men returned to England by way of the island of St. Helena, they brought information about two instruments that were to figure substantially in their coming assignment in the New World. One was an astronomical clock, made for the Royal Society to aid in determining the ellipticity of the earth. It was this same clock which was later to be shipped to Mason and Dixon to make the New World’s first accurate determination of longitude by means of the eclipses of the satellites of Jupiter.

Perhaps more important was the zenith sector which had been used at St. Helena by Mason’s mentor, the astronomer Nevil Maskelyne. This instrument, a graduated arc of a vertical circle used in conjunction with a telescope and plumb line, Maskelyne found to have a serious flaw, owing to the manner in which the plumb line was suspended. As a consequence of his findings, the Royal Society at once set to work to construct a corrected sector, and this new instrument was brought by Mason and Dixon when they came to America. It was thus that Thomas Penn could write with confidence to the Reverend Richard Peters, former secretary of the colony, that the right men and the right equipment had at length been found. Messrs. Mason and Dixon, he wrote, would bring with them “the line Sector, two Transit Instruments, and two reflecting Telescopes, fit to look at the Posts in the Line for ten or twelve miles.”

The Penns and Frederick, the sixth Lord Baltimore, having agreed on Mason and Dixon as the realm's bestqualified surveyors, a contract was drawn up on July so, 1763, stipulating their responsibilities and compensation, the latter to be ten shillings, six pence a day until their arrival in America, and one pound one shilling daily for the period of the survey. The expenses of the project were to be shared equally by the proprietors, and the English scientists were to file identical reports of their findings with the commissioners from each colony. Mason and Dixon were to come to America as soon as possible.

In the course of the protracted dispute over their border, the proprietors had finally agreed that the boundary line between Maryland and Pennsylvania proper should be run east and west along a latitude circle fifteen miles south of the southernmost limit of the city of Philadelphia. The first task for Mason and Dixon on arriving in the colonies was therefore to accurately fix this starting point. The men reached Philadelphia November 15, 1763, unpacked their instruments, and began construction of a small building to serve as their first observatory. By the first of December the "gentlemen commissioners" from Maryland arrived, and in company with those from Pennsylvania, they inspected and confirmed the spot which marked the southernmost limit of the city. After some sixty observations of stars selected from Bradley's Catalogue, made over a period of three weeks, Mason and Dixon determined that this spot was at latitude 39 degrees 56 minutes 29.1 seconds north—a finding which later observations showed to be in error only by 2.5 seconds.

Moving westward along this line of latitude to the farm of John Harlan on the Brandywine, "the Telescope &c of the Sector ... carry'd on the Springs (with leather beds under it) of a Single Morse Chair," the surveyors made further observations from a point where they could run a direct line fifteen miles south—to "a plantation belonging to Mr. Alexander Bryan," the precise spot being in the middle of the front of Mr. Bryan's house. This finding was duly accepted by the two commissions, and the way finally opened for an official determination of the boundary between Pennsylvania and Maryland.

It was long overdue; Mason noted in his journal that the former sheriff of Lancaster had described to him an incident in which a "Mr. Crisep," living on the Susquehanna in territory he maintained was in Maryland, had been set upon by fifty men from Pennsylvania who burned his house and shot one of the besieged party as they ran out. "Mr. Crisep" appears to have been Colonel Thomas Cresap, whose house indeed was burned in 1736—in retaliation, it was alleged, for numerous acts of violence which Cresap's "border ruffians" had precipitated. (The Colonel, incidentally, survived the attack reported to Mason and lived to earn laurels as a patriot in both the French and Indian War and the Revolution.) There were frequent occasions when the border claims of both proprietaries had flared into armed combat.

Mason took a keen interest in all his New World surroundings, both scientific and nonscientific. Once when winter weather suspended surveying, he and his colleague went to New York for a couple of weeks to enjoy the activities of that colonial community. En route they stopped at "Prince Town in the Jersies" and Mason admired "the most elegant

built Colledge I've seen in America." On another occasion, when the survey was getting under way, Mason took a short side trip to see a large cave, describing the churchlike atmosphere in a lugubrious vein:

On the side walls were drawn by the Pencil of time, with the tears of ye Rocks: the imitation of organ, pillar, columns and monuments of a Temple; which, with the glinting, faint light, makes the whole an awful, solemn appearance, Striking its Visitors with a strong and melancholy reflection: That, such is the abodes of the Dead; Thy inevitable doom, O Stranger, soon to be numbered as one of Them.

The business at hand, however, occupied most of the scientists' attention. On the Harlan farm, where they set up a more or less permanent headquarters, they erected a crude monument, known by the unindoctrinated for many years after as the "stargazers" stone," and spent much of the snowbound winter making observations.

The Penns and Lord Baltimore had been unduly optimistic as to the period required for the survey, and the deadline had to be extended several times. Weather, transportation, the cumbersome procedure of meeting periodically with the commissioners to make progress reports, and, in the late stages of the project, the threat of Indian interference—all interposed delays. On the whole, however, the parties on both sides were quite satisfied with the work of Mason and Dixon. True, in April of 1764 Governor Horatio Sharpe of Maryland received a letter from Cecilius Calvert, secretary of the colony, alleging that the Penns had offered the Englishmen a contract for the surveying of Pennsylvania's northern border as a *douceur* if the southern border survey treated the Quaker colony right. But on finding that Mason and Dixon had located their original point, fifteen miles south of Philadelphia, a quarter of a mile farther north than previous surveys had indicated, the Calverts' suspicions were quieted.

Before actually surveying the line for the northern boundary of Maryland (39 degrees 43 minutes 17.6 seconds), Mason and Dixon proceeded to establish the Maryland-Delaware boundary. On June 25, 1764, they arrived at the southwest corner of Delaware as established by the colonial surveyors—a point midway on the transpeninsular line running west from where Cape Henlopen was indicated on the early maps. From this point Mason and Dixon ran the tangent line to the New Castle "twelve mile arc." On September 25 they reported that this line, as finally run, lacked only two feet, two inches of tangency to the twelve-mile circle; and as the length of the line was over eighty-two miles, it was accepted by the commissioners. □ This survey, when completed, included a 1.466-mile arc of the twelve-mile circle itself, plus a 3.574-mile "North Line" connecting the arc with the northeast corner of Maryland. The scientists stored their instruments for the winter, and the party disbanded to await more favorable weather. On April 4, 1765, Mason and Dixon returned to the Bryan plantation, fifteen miles south of the latitude of Philadelphia, where they set up the zero milestone for the survey of the main segment of their line, the Maryland-Pennsylvania boundary. There they placed a reference marker which in their notes they frequently described as the "Post mark'd West."

In the running of the border Mason and Dixon, using astronomical observation and the laws of spherical geometry, checked their geographical positions every eleven and a half miles—more precisely, every ten minutes of great circle. Deviations were then corrected at each mile point. These points, temporarily marked by posts, were on the true parallel of latitude and represented the boundary between Maryland and Pennsylvania.

To facilitate sighting and marking, the surveyors employed axemen to clear a rough corridor (or “Visto,” as they called it) “8 or 9 yards wide” along the points of their periodic observations and measurements. Horizontal measurements were taken with a Gunter’s chain of sixty-six links on level ground, and with a triangular-shaped surveyor’s “level” on the slopes. By this procedure of making horizontal measurements controlled by astronomical observations they continued westward, until ultimately, on October 9, 1767, they reached a point about 233 miles from the “Post mark’d West,” beyond which the Indian tribes refused to permit further work.

The survey was consistently meticulous. “To prove that the Chain Carriers had made no error,” Mason wrote in his journal at one point, “I took a Man with me, a few days after, and measured it myself; and made it within a link of the same.” After the first twenty-five miles the party (about a dozen persons) retraced their steps and checked their work. By June, 1765, they were again moving westward, crossing the Susquehanna at Peach Bottom, Pennsylvania, and continuing to the summit of the Blue Ridge mountains, which they reached in late October. Here Mason and Dixon suspended the survey for the season, left their instruments “not in the least damaged to our knowledge” with Captain Evan Shelby, a well-known frontiersman, and spent the next few weeks checking their distance measurements as they returned eastward.

The winter months of January and February, 1766, were spent sightseeing in adjacent colonies, including a trip to Williamsburg, “the Metropolis of Virginia,” and a call on Governor Sharpe at Annapolis. By late March, they were back at Captain Shelby’s and again moving westward until, on June 16, Mason noted that they had reached “the most westernmost Waters [the headwaters of the Potomac] that runs to the Eastward in these parts.” It seems, in fact, that the surveyors believed they were getting close to “the Boundary between the Natives and strangers, in these parts of His Brittanic Majesties Collonies.”

The party now set itself to the task of establishing the actual markers for the border they had fixed. Mason noted in his journal on June 18, 1766:

Set a Post (18 inches square 3 feet in the Ground and 5 out) ... mark’d M on ye South Side, P on ye 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 thro’ Points, laid off from the Line we had run ... toward the Post mark’d West in Mr. Bryan’s field.

On the tangent line of the boundary between Maryland and the Delaware counties, the party was provided with limestone markers which had been cut in England for the purpose and shipped directly to various points on Chesapeake Bay. These were set at

every mile point, with every fifth marker distinguished by a “crown stone” on which were carved the arms of the proprietors in place of the M or P. On one occasion while setting the stones along the “West Line” the scientists had an opportunity to view it from the summit of a hill and observe its curvature. Mason wrote, “I saw the Line, still form’d the arch of a ... circle, very beautiful, and agreeable to the Laws of a Sphere.” He also indulged his keen interest in landmarks along the way, and in recording the moral which might be drawn from them:

Went to see Fort Cumberland [he wrote on June 27, 1766] ... Going to the Fort, I fell in to General Braddock’s Road, which he cut thro’ the Mountains to lead the Army under his command to the westward in the year 1755 but, fate: how hard: made thro” the desert a path, himself to pass; and never, never to return.

Most of the summer and autumn of 1766 was spent in prolonging the Maryland-Pennsylvania border to the approximate limit indicated by the Pennsylvania charter, five degrees in longitude westward from their starting point. The scientists also extended the line from the “Post marked West in Mr. Bryan’s Field” eastward to the Delaware River. This project they completed on December 1, 1766. The commissioners, however, desired to have the main line go farther westward, and advised Mason and Dixon that Sir William Johnson, the royal agent for Indian affairs, was negotiating with the natives for its further extension into their territory. Additional work would await the outcome.

This was agreeable with Mason and Dixon. They had observed that the smooth terrain on what is now the Delmarva Peninsula was well adapted to a geodetic determination of the exact linear measure of one degree of latitude this far from the equator. They appealed to Maskelyne, then the Astronomer Royal at Greenwich, who arranged for the Royal Society to sponsor and finance the undertaking. The Society also granted their requested fee of £200 for the work, and assured them that if the proprietors should not be willing to give them their passage money after the delay which would be occasioned by this extra project, the Society would make it good.

But both Frederick, Lord Baltimore, and the Penns acquiesced in this research, and the Penns even sent the scientists some instruments which they had recently acquired. Not only would the work occupy the geodesists during the winter while negotiations between Sir William and the Indians were being carried on, but, as it developed later, the commissioners were interested in having the results of the investigation in order to fix the precise length of a degree of longitude along the east-west border. (This could be calculated from the value of a degree of latitude.)

Maskelyne sent his colleagues a long letter of instruction for the most accurate astronomical measurements, and through the instrument maker John Bird he arranged for the fashioning of a five-foot brass rod as a standard measure. With the aid of these and other improved instruments sent from abroad, Mason and Dixon determined, on the Delmarva Peninsula, the first precise value of dimensions of the earth ever made in North America.



In June, 1767, Sir William Johnson advised that the Six Nations had reluctantly consented to a limited extension of the border between Pennsylvania and Maryland. The situation could be rather delicate, the commissioners warned Mason and Dixon: "As the public Peace and your own Security may greatly depend on the Good Usage and Kind Treatment of these [Indian] Deputies" who were to accompany the party, "Spiritous Liquors" were to be given to them only in small quantities and not more than three times a day.

The Englishmen were eager to gather information about the country beyond the Atlantic seaboard for scientific and perhaps for political reasons. Much of Mason's journal for this part of the survey was devoted to "a description of the Ohio and Mississippi, as describ'd to me by Mr. Hugh Crawford, our Interpreter, who has traversed these parts for 28 years." From this description he noted:

From the end of our line to the Ohio on a West Course is about forty miles ... This West Line ... if extended would ... pass through the Southern part of the Illinois. The distance about 7 or 800 miles. A country says my informer thro' which you may travel 100 Miles, and not find one Hill, or one Acre of barren land.

The survey itself was not destined to go much farther. Shawnee war parties were reported to be active, and the escorting Senecas and Delawares had no intention of running into them. A sizable group of Indians had made up the escort, but throughout August and September there was a steady flow of departures. Mason and Dixon prevailed upon their axemen to stay with them, however, until on October 9, 1767, they reached the mouth of Dunkard Creek about thirty miles east of what is now Pennsylvania's southwest corner. Here the remaining Indians unanimously declared that the line could not be extended farther. The Englishmen accordingly took their final observations—"233 Miles, 3 Chains and 38 Links from the Post mark'd West."

Winter came early in the high altitudes, and as Mason and Dixon worked their way back eastward, foot-deep snow hampered them. It was not possible to convey the remaining limestone markers to the western-most part of the line, so mounds of earth and rocks were constructed to identify the border. By the end of December they were able to report to the joint commission that the work had been completed. The final request of the commission was that Mason and Dixon prepare a map of the border for an engraver and that they provide the commission with the length of a degree of longitude along the "West Line." The map was completed within a few weeks. As for the longitude measurement, Mason and Dixon reported with proper scientific qualification:

By comparing our measurement of a Degree of the Meridian with that made under the Arctic Circle, supposing the Earth to be a Spheroid of an uniform Density: a Degree of Longitude in the Parallel of the West Line is 53.5549 Miles. But as the Earth is not known to be exactly a Spheroid, nor whether it is everywhere of equal Density, and our own Experiment being not yet finish'd; we do not give in this as accurate. [The modern value is 53.2773 statute miles.]

It was accurate enough to satisfy the commissioners, who indeed pronounced themselves highly gratified with the entire project. From England the Penns took pains to send Mason and Dixon a letter of appreciation. Mason himself was elected to membership in the American Philosophical Society—quite possibly through the suggestion of Benjamin Franklin.

Although the survey ended the Pennsylvania-Maryland-Delaware border dispute, the original charter prepared for George Calvert, first Lord Baltimore, continued to play tricks. This document had put the western limits for Maryland at “the first fountains of the Pattowmack,” but the Potomac River has so many forks and branches that unanimity of opinion could hardly be expected as to just what point was represented by this specification. The Mason-Dixon survey actually ran about thirty miles west of what was finally fixed by the United States Supreme Court, in 1912, as the northwest corner of Maryland. And so, as it turned out, the Calverts had paid half of the cost of a portion of the survey which had no bearing on their territory. For both proprietors it was an expensive undertaking, costing in all the equivalent of at least \$100,000 in modern currency.

On September 11, 1768, four years and ten months after their arrival, the English geodesists sailed from New York for Falmouth. In London, on November 11, they submitted a final bill for £3,512/9 s., including passage money. Both proprietors willingly paid. In August, they already had joined in a petition to the King in Council to ratify the settlement of the border along the line surveyed. The royal ratification had no legal effect, but both sides seemed to feel that a seal of approval had been placed on the whole.

The daily progress of the survey had been recorded in a set of field notes kept by Mason, from which a final report was made to the commissioners. This journal was almost lost to posterity. Following the preparation of the “fair copies” of the field data for deposit with the two proprietaries, Mason or his descendants either lost or discarded the original manuscript. In 1860 it turned up in Halifax, Nova Scotia, among a pile of papers consigned to a trash heap. It was included among the Canadian exhibits at the Philadelphia Centennial in 1876, where it was called to the attention of Hamilton Fish, Secretary of State. After a brief negotiation with its owner, Judge Alexander James of the Supreme Court of Nova Scotia, the State Department purchased it for five hundred dollars in gold. It is now on file in the National Archives.

Jeremiah Dixon, always the lesser-known partner in the survey and other joint ventures with Mason, soon dropped out of history. He died in 1779. Charles Mason, for all his accomplishments as a scientist, fell into financial and physical decline in the early 1780's. In the fifteen years following the project in the New World, he had completed his star charts, which were to become a standard navigation aid, and had made various scientific expeditions for the Royal Society. Also, during this time, he assumed the responsibilities of a wife and family. But the remuneration for what was primarily a scholarly career was then, as now, inadequate for the demands of a growing household and declining health. Late in 1786 Mason turned up in Philadelphia with his wife and eight children. What prompted this return to the scene of his definitive project of twenty

years earlier can only be conjectured. Apparently he had some hope that Franklin might be able to find a place for him. He may have thought of participating in the survey of western lands now opening up; but he died a few weeks after his arrival.

With the years, much of the work of the surveyors inevitably became undone. Some of the original boundary stones were removed, either by builders who found them handy for incorporating into a wall, or by farmers who found them in the way while plowing, or occasionally by someone who felt that his property was on the wrong side of the state line. In the western region, where earthen mounds had formed the markers, the elements tended to obliterate them. The first of several resurveys was begun in 1849 to re-establish the complex boundary relations at the northwest corner of Delaware. More refined instruments and more accurate astronomical and geodetic data for the mathematical evaluation of observations disclosed slight errors in the work of Mason and Dixon, but Lieutenant Colonel James D. Graham of the U.S. Army Engineers, who supervised the 1849 resurvey, made a point of praising “the surprising accuracy” of the 1764 observations. Colonel Graham’s reaction was to be echoed in 1885, when the U.S. Coast and Geodetic Survey confirmed the western extension of the line which divided Pennsylvania from what had become, in the meantime, West Virginia.

Another resurvey was run in 1902—again under joint commissions from Maryland and Pennsylvania and with the aid of the U.S. Coast and Geodetic Survey. Where practicable, the original markers were reset in concrete; otherwise, new stones were put in place with the dates 1766/7 and 1902 carved, respectively, on their eastern and western faces. The result, stated the commissioners in their final report, was to confirm the remarkably small degree of error in the work of Mason and Dixon, which was carried on through wild country without the benefit of modern instruments. For the two English scientists who laid down the line, this should be a sufficient memorial.

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#### A Short Time Between Drinks

Other colonial surveys besides that of Mason and Dixon were fraught with political overtones, both foreign and domestic. In 1726, for example, when North Carolina became a royal colony, the Crown directed its governor and that of Virginia to undertake a joint survey of the “dividing line.” The colorful William Byrd II, Virginia’s commissioner, tried to put the North Carolinians in a duly cooperative mood with his letter advising them of the plan the Virginians proposed to follow:

“It is very proper to acquaint you in what manner we intend to come provided, that so you Gentlemen, who are appointed in this same station, may if you please do the same honor to Your government. We shall have a Tent with us and a Marquis [canopy] for the convenience of ourselves and our servants. We shall be provided with as much Wine and

Rum as will enable us and our men to drink every Night to the Success of the following Day, and because we understand there are many Gentiles on your frontier who never had an opportunity of being Baptised we shall have a Chaplain to make them Christians. For this Purpose we intend to rest in our Camp every Sunday that there may be leisure for so good a work. And whosoever of your Province shall be desirous of novelty may report on Sundays to our Tent and hear a Sermon. Of this you may please give Public Notice that the Charitable Intentions of this Government may meet with the happier Success.”

After frequent delays and adventures—Byrd complained of the “anguish distempers” of the Dismal Swamp and of the “Adamites, without innocence,” who lived with Indian women thereabout—the joint commission started westward. From the Atlantic to the foothills of the mountains, things went fairly well, but on Sunday, October 6, 1729, the North Carolina commissioners advised their Virginia colleagues that they did not intend to proceed farther. Byrd says the going was becoming rougher, and the Carolinians had failed to provide for an adequate flow of supplies to the advance bases. In any case, he reported this denouement of the joint project:

“When the Divine Service was over, the Surveyors set about making the Plats of so much of the Line as we had run ... Our pious Friends of Carolina assisted in this work with some Seeming Scruples, pretending it was a Violation of the Sabbath, which we were the more Surpriz’d at, because it happen’d to be the first Qualms of Conscience they had ever been troubled with during the whole journey. They had made no Bones of Staying from Prayers to hammer out an unnecessary Protest, tho’ Divine Service was no Sooner over, but an unusual Fit of Godliness made them fancy that finishing the plats, which was now matter of necessity, was a prophanation of the Day. However, the Expediency of losing no time, for us who thought it our duty to finish what we had undertaken, made such a Labour pardonnable.

“In the Afternoon Mr. FitzWilliam, one of the Commissioners for Virginia, acquainted his Colleagues it was his Opinion, that by his Majesty’s Order they could not proceed farther on the Line, but in Conjunction with the Commissioners of Carolina; for which reason he intended to retire, the Next Morning, with those Gentlemen.

“This looked a little odd in our Brother Commissioner [FitzWilliam, Byrd said, wanted to return to preside over the opening of court in Williamsburg and thus draw double pay as a judge and a Commissioner]; tho’, in justice to Him, as well as to our Carolina Friends, they stuck by us as long as our good Liquor lasted, and were so kind to us as to drink our good Journey to the Mountains in the last Bottle we had left.”