

# COLLECTING SOURCE MATERIAL ABOUT CHARLES MASON AND JEREMIAH DIXON

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Charles Mason and Jeremiah Dixon are remembered as astronomers and geodetic surveyors the annals of British science. Early in life Mason served for five years as assistant observer Doctor James Bradley, the third Astronomer Royal to direct Greenwich Observatory. In 1760, Mason, with Dixon as assistant, was chosen by the Royal Society to observe Venus cross the disk of the Sun on June 5, 1761. They observed the Transit at the Cape of Good Hope. During the following autumn they joined Nevil Maskelyne, another observer for the Royal Society, on St. Helena and worked with him in a program of research for the Society until the following spring. Maskelyne succeeded to the directorship of Greenwich Observatory early in 1765, as fifth in the distinguished line of Astronomers Royal. He established the *Nautical Almanac* immediately. Mason and Dixon continued as his co-workers. They were in America from 1763 to 1768 and while there they measured a degree of latitude and made astronomical and geophysical observations for the Royal Society under Maskelyne's direction. Another transit of Venus was due to occur on June 3, 1769. In preparation for it Astronomer Royal Maskelyne published a pamphlet of instructions for observers as a supplement to the *Nautical Almanac*. Mason and Dixon again observed the Transit for the Royal Society, the former in Northern Ireland, the later at Hammerfest, Norway.

The British colonies in North America were to see the Transit begin in the early afternoon of June 3 and to continue visible until sunset. Accordingly, the Astronomer Royal asked Thomas Penn to use his good offices toward securing observations from Pennsylvania. The outcome was the masterly project for observing the Transit planned and carried out by members of the American Philosophical Society in cooperation with Astronomer Royal. The Assembly of Pennsylvania gave financial support. Thomas Penn sent a much needed telescope. On his farm at Norriton, David Rittenhøjise built and equipped an observatory

where he, William Smith, John Lukens, Thomas Barton, John Sellers, and others, observed the Transit. John Ewing and Hugh Williamson observed from State House Square. Owen Biddle and Joel Baily at Lewes in Sussex County on the Delaware. Baily, a resident of Chester County, had been a right-hand-man to Mason and Dixon. He had helped in the survey of the boundaries, and had made equipment and had taken observations while work for the Royal Society was in progress.

The observation of the Transit of Venus of 1769 by scholars in Philadelphia, with all its attendant features, is but one instance of the whole-hearted team-work among scholars in the Mother Country, scholars in the colonies, and public officials on both sides of the Atlantic that brightens the record of the eighteenth century.

Mason prepared material for the *Nautical Almanac* through two decades. To the issue for 1773 he contributed a "Catalogue of 387 fixed Stars" calculated from Dr. Bradley's observations at Greenwich. The *Almanac* for 1774 first published Mason's improvements of Mayer's *Lunar Tables*, a scholarly production from Göttingen that he had first met at Greenwich while assisting Dr. Bradley. Mason continued to improve these *Tables* under the supervision of Maskelyne and with financial support from the Commissioners of Longitude. They were published by the Commissioners in book form in 1787, and Mason was awarded a premium of 750 pounds sterling by the Commissioners for this contribution to the art of "finding the longitude."

Mason and Dixon spent five years in America, from the autumn of 1763 to the autumn of 1768, in the services of the Proprietor of Maryland and of the proprietors of Pennsylvania and of the Royal Society. They surveyed and marked the northerly-southerly line that separates Delaware from Maryland and the parallel of latitude that bounds Maryland and Pennsylvania. And they did astronomical, geodetic and geophysical work for the Royal Society under the direction of Astronomer Royal Maskelyne.

While in America Mason and Dixon were elected to membership in The American Society held at Philadelphia for promoting Useful Knowledge, Mason on March 27, 1767, Dixon on April 1, 1768. Mason's certificate of membership is pasted in his "Daily Journal" near its end, and is preserved in the "Journal" in

National Archives, Washington, D. C. The certificate is here reproduced. Astronomer Royal Maskelyne was elected to membership in the American Philosophical Society on January 18, 1771. He, Benjamin Franklin, David Rittenhouse, and many others who were members of both the Royal Society, and the Philosophical Society were in their days living evidence of that close relationship that, must unite men and societies who are engaged in scholarly endeavor.

The Library of the American Philosophical, Society treasures a number of documents and publi-cations that are concerned with the Mason-Dixon Survey in America. On January 9, 1844, Mr. George M. Justice, a member of the Society, gave it a manuscript copy of the "Minutes of the Com-missioners for determining the Line between Pennsylvania and Maryland" which he had made during 1842 from an authenticated copy in the possession of Ferdinand R. Hassler, at that time Superintendent of the U.S. Coast Survey. These Minutes are accompanied by a volume of vouchers which are, says Mr. Justice,

the original receipts given for the money expended by the Penn family in running the line between Pennsylvania and Maryland from the year 1760 to 1768. They were preserved among bills and accounts which came into my possession through one of the descendants of Edmund Physick who, during his lifetime was Receiver General for the Penns.

A map of the boundaries as surveyed by Mason and Dixon was prepared by them for the Commissioners immediately after the completion of the field work in the late autumn of 1767. The manuscript was published during the following summer. A minute certifying the map to be "a true and exact Plan and Survey" was adopted by the Commissioners, and was signed by all of them at Chester Town, Maryland, on November 9, 1768. The Library has two well preserved copies of this map. One copy was presented by Mr. James Mease on May 19, 1826.

A beautiful copy of the same map was presented to the Commonwealth of Pennsylvania on January 30, 1837, by Benjamin Chew of Cliveden, Philadelphia County, a son of the Commissioner of the same name. It has been republished by the Commonwealth along with other maps of the boundaries. Charles Mason refers to the publication of the maps in his "Daily Journal".

Mason migrated from England to Pennsylvania after the close of the Revolution. On September 27, 1786, he wrote from a Philadelphia address to Benjamin Franklin, announcing his arrival with a wife, seven sons, and a daughter, "all in helpless condition." Mason was ill and confined to his bed. He died on October 25. This letter preserved by the Library among the Franklin Correspondence. During 1946 the Library of the Philosophical Society was given films of four primary sources of material concerned with Mason and Dixon in America. These are:

(a). Original Manuscript copy of Minutes of the Joint Commissioners, 1760-1768, preserved in the Land Office Hall of Records, Annapolis, Maryland.

Burchard and Matthews, bibliographers of Mason and Dixon, referred to this as "the only original and only complete copy of the minutes of the commissioners that has been so far found". The film has been compared with the manuscript copy of the minutes presented to the Library by Mr. Justice. No material differences have been discovered.

(b) Field Notes and Journals, 1760-1763, of the Provincial Surveyors engaged by the Joint Commissioners to make the survey.

These are contained in two manuscript books preserved in the Land Office, Hall of Records, Annapolis, Maryland.

Burchard and Matthews, bibliographers, referred to these in 1909 as the only complete original copies or complete copies yet found.

(c) Charles Mason's Daily Journal, November 15, 1763 to September 11, 1768, the original manuscript copy preserved in National Archives, Washington, D.C.

This diary is all inclusive. It reports all work done by Mason and Dixon for the Commissioners and the winter excursions of Charles Mason, to New York and Long Island in 1765, and to Maryland and Virginia in 1766. It includes letters, and a full account of work done for the Royal Society during the winter of 1766-1767, and during 1768. It records astronomical and meteorological phenomena, persons and places seen and visited, accounts of soil, vegetation, forests, water courses, scenery, and of lands that lie to the west. It contains an entertaining account of the Indian escort, provided by the Six Nations, that gave Mason and

Dixon safe conduct from the crest of the Alleghenies to the lands west of the Monongahela River.

Taken together the minutes of the Commissioners, the field books of the provincial surveyors, and the Journal of Charles Mason give a detailed account of the boundary surveys from 1760 to 1768, and of all things incidental thereto, told by the men who supervised and those who carried out the project. Copies of the original complete records are now deposited together in one library. To date, the complete story has been published only in parts and fragments. Accordingly the feasibility, and desirability of publishing the documents just described in facsimile and together in are now receiving careful study and consideration.

Early in 1947 the Library of the American Philosophical Society began to receive copies of source material concerning Mason and Dixon whose original are preserved in England. These are being sent by H. W. Robinson, Esq. Librarian of the Royal Society who was persuaded to undertake the search.

Mr. Robinson has already sent a wealth of material from records in possession of the Royal Society. Included is a film of the minutes of all councils of the Society held from July 14, 1760 to December 22, 1768. Mason and Dixon are mentioned repeatedly. And in fact they were present by invitation at the Council of December 22, 1768. The sequence of events that led up to the scientific project undertaken for the Royal Society by Mason and Dixon while in America has been cleared up by these minutes.

The grant to William Penn provided that Pennsylvania should extend five degrees of longitude westward from its eastern boundary the Delaware River. This implied that the parallel of latitude which Mason and Dixon were engaged to mark out between Maryland and Pennsylvania should terminate five degrees of longitude west of the Delaware. Now the lengths of degrees of longitude and of degrees of latitude in North America were open questions in 1763. Only estimated values were available. Degrees had not yet been measured on this continent. Mason and Dixon knew the situation, saw their opportunity, and wrote to friends in London. At a council of the Royal Society held on June 28, 1764, there was

read a letter from Mr. Jeremiah Dixon . . . dated from Philadelphia, and addressed to

Mr. John Bird, wherein mention is made of a Proposal to the Society to measure a Degree of longitude upon a parallel at Philadelphia, and It was resolved that the same be taken into consideration at a future Council.

At a council held on October 25, 1764

the President having mentioned to the Council that Mr. Penn had made an Offer to the Society' of directing Messrs. Mason and Dixon . . . to measure a degree of Longitude, upon a parallel of latitude be-tween Maryland and Pennsylvania without any Expense to the Society if the Society would direct the method of doing it,  
Ordered that thanks be returned to Mr. Penn for this Offer, and that he be acquainted with the acceptance thereof-- and that the President, Lord Charles Cavendish, Mr. Canton, Mr. Maskelyne, Mr. Raper and Mr. Short, be a committee to draw up Instructions for that purpose and to consider what Instruments will be necessary.

During June 1765, Mason and Dixon were obliged to wait for ten days in New castle County upon Delaware for the Commissioners to assemble. To improve the time they wrote jointly a five page letter to their old comrade in research, Nevil Maskelyne, now Astronomer royal at Greenwich offering congratulations for his appointment and outlining in great detail the opportunities that were at hand to measure both a degree of longitude and a degree of latitude along the boundaries which they were engaged in surveying.

This letter was considered at length at a Council of the Society held on October 17, 1765. Deliberations and reports upon it continued for many weeks. Finally the proposal to measure a degree of latitude was sponsored, funds were appropriated, and the Astronomer Royal was requested to draw up instructions for carrying out the project and to secure and forward such equipment as might be needed.

The carrying out of the project is told in detail in Mason's Daily Journal and in the reports that Maskelyne and Mason and Dixon made to the Royal Society in the late autumn of 1768. They are published in *Philosophical Transactions* for that year.

Mr. Robinson has visited Greenwich Observatory and Oxford University and has found material at both institutions. Copies of some of it have been received. Copies of the rest are either on the way or are in preparation. Many searches and inquiries initiated by Mr. Robinson are still pending. Others are listed for

attention later.

Notices of Mason's death in 1786 published in newspaper (on file in the Library of the Philosophical Society) tell that Mason while ill gave his manuscripts and scientific papers to Rev. John Ewing, Provost of the University of Pennsylvania, with the suggestion that Mayer's *Lunar Tables* be still further improved and that an American edition of them be published.

In his *Memoirs of Dr. James Bradley* (Oxford 1832) Professor S. P. Rigaud says (on page

LXXXIX): "At the Oxford observatory there are a number of manuscript books and papers of

Charles Mason, as well as many of his letters to the late Dr. Hornsby."

Recently Mr. Robinson has sent to the Library of the American Philosophical Society a quotation from notes made by Sir Joseph Banks at the meeting of the Board of Longitude held on December 1, 1792, to the effect that Mary Mason, widow of Charles Mason, Astronomer, had placed before the Board papers of her late husband in support of claims for an additional premium alleged to be owing to him; that the Board had refused to recognize the claim, but had offered the widow-Mason one hundred pounds sterling "for the Papers that she has . . . and in case of her refusal that they be returned to her whenever she chuses to demand them."

Are there any chances that the papers of Charles Mason reported to have been given to Provost John Ewing during October 1786, those for which the Board of Longitude offered his widow one hundred pounds sterling on December 1, 1792, and those that Were reported to be at Oxford Observatory in 1832, are one and the same group of papers? And where are they?

Inquiries are being made.

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[1] The American Philosophical Society was founded In 1743 by Benjamin Franklin. Twenty three years later The American Society for promoting, and propagating useful knowledge held at Philadelphia was founded. There were persons who were members of both societies. A union of the two societies into the American Philosophical Society held at Philadelphia for promoting useful knowledge occurred in 1769 and Benjamin Franklin was elected President.