

Instruments for taking Observations at the Center of Newcastle & the Middle Point of the Line that was run in 1751 from Fenwix's Island I cannot tell, but if the Surveyors can run the Meridian or North Line which they have been now employed on with such Accuracy & Truth as they seem to think they can, I apprehend that the exact Difference of Longitude between the Center of Newcastle & the abovementioned Middle Point will be more truly discovered by the Surveyors running the North Line they have already begun & another straight Line from the Center of Newcastle to intersect it, than by any Astronomical Observations, & tho we should not by running these Lines be able to determine to so great a degree of Accuracy as might be wished what is the true & exact Difference of Latitude between the Center of Newcastle & the said Middle Point (by reason of the great difficulty of measuring a Line of such Extent horizontally) yet an Error that may arise from the Mensuration might possibly be discovered by taking Observations carefully at the two Points for I am told that the Latitude of two Points on the Surface of the Earth might by a skillful Observer & with a proper & good Instrument be determined to a Second, which is equal to 102 feet measured on the Surface of the Earth. As I am apprehensive from what passed between the Commissioners who were appointed by Your Ldp's Father & the Proprietors of Pennsylvania to carry the Articles of 1732 into Execution that the Commissioners now appointed to finish the Business may at times differ in Opinion about the best Mode of executing this or that particular part of the Work, I should be very glad if Your Ldp would submit some queries which I shall take the Liberty to transmit & such others as Your Ldp may think fit to the Consideration of some Gentⁿ who have devoted a great part of their Lives to the Study of the Mathematicks & whose Reputation is established, such I presume are Doctor Bradley Regius Professor of Astronomy at Greenwich, M^r Senex the Map-Maker & M^r Cockayne who reads Lectures at Gresham College, but as these Gentⁿ may not be apprized of all the Difficulties which will attend running Lines on the Surface of the Earth some thro a Forrest, some over Boggs & Marshes & others over a hilly or mountainous Country & the Difficulties which will attend the measuring such Lines horizontally your Ldp will not perhaps think it amiss to submit the Opinions or Schemes of these Gentlemen or any other Theorists whom you may be pleased to consult to the Consideration of some Person that hath been used to run & measure Lines on the Surface of the Earth, for oftentimes a Thing might appear very easy in Theory which the best Artist cannot carry into Practice. Among the Queries which I have

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