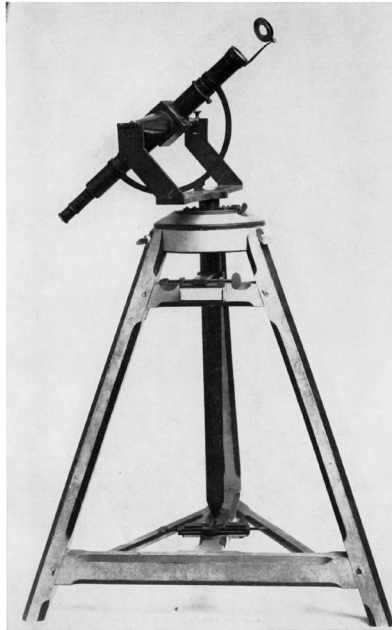




Benjamin Barker and the Survey of District of Colombia, 1791



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Benjamin Banneker and the Survey of the District of Columbia, 1791

SILVIO A. BEDINI

The name of Benjamin Banneker, the Afro-American self-taught mathematician and almanac-maker, occurs again and again in the several published accounts of the survey of Washington City begun in 1791, but with conflicting reports of the role which he played.

Writers have implied a wide range of involvement, from the keeper of the horses or supervisor of the woodcutters, to the full responsibility of not only the survey of the ten mile square but the design of the city as well. None of these accounts has described the contribution which Banneker actually made. He was, in fact, the scientific assistant of the surveyor, Major Andrew Ellicott, and his work was limited to making astronomical observations and calculations with Ellicott's instruments maintained in the field camp, for the period of the first three months of the project.

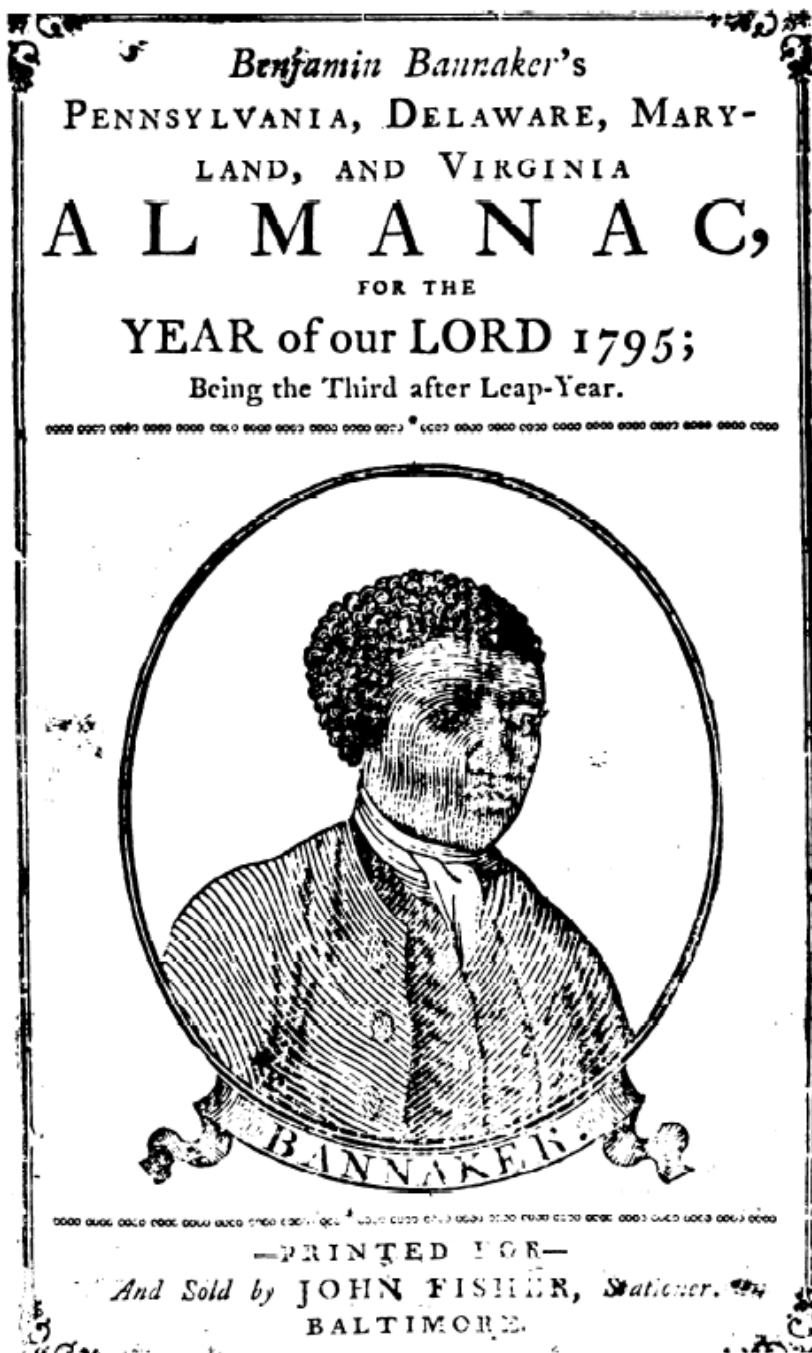
Banneker has become a familiar figure in Afro-American history and numerous accounts of his life and achievements have been published during the past century and a half and more. One such biographical sketch, based on earlier published sources, appeared in the *Records* in 1917.¹

Banneker was a free Negro born on November 9, 1731, in Baltimore County, on a farm located within a mile from the present Ellicott City. His grandmother was a white English-woman who was arrested for a minor offense and sent to Maryland as a transported convict. After serving her period of indenture, she developed a small farm and purchased two slaves, whom she subsequently freed. One of them, named Bannaka, she married and they became the parents of four children. The oldest daughter, Mary, married Robert, a freed Negro slave originally from Guinea and he took her name. Benjamin was their oldest child and they also had three daughters. In 1737

¹ P. Lee Phillips, "The Negro, Benjamin Banneker; Astronomer and Mathematician, Plea For Universal Peace," *Records of the Columbia Historical Society*, Volume 20, 1917, pp. 114-120.

Robert purchased a farm of one hundred acres on which he built a home and developed a small tobacco plantation. Benjamin assisted with the farm from the time he was a young boy. After his father's death in 1759, he then took over the farm entirely and continued to work as a tobacco planter until about 1788. Increasing age and chronic ailments were beginning to make it difficult for him to continue the arduous work of the farm and he sold small sections of his land, first to a nephew and then to others, so that he could maintain himself independently. Banneker had had relatively little education in his lifetime. As a boy his grandmother had taught him to read from a Bible and he was enabled to attend a small country school nearby during several winters. He was avidly interested in reading, however, and he was particularly fond of mathematical puzzles. He continued to educate himself as and when he could obtain reading materials. When in 1771 the Ellicott brothers established a mill community at Ellicott's Lower Mills (now Ellicott City), Banneker became acquainted with several members of the family. Among them was George Ellicott (1760-1832), the young son of one of the founding brothers. George re-surveyed the Baltimore Turnpike and in addition to surveying developed an interest in astronomy. He acquired a number of works on the subject, as well as instruments, and in the 1780's he occasionally presented informal evening lectures outside his home. It was probably at these meetings that Banneker's interest was aroused. In 1789 George loaned Banneker several of his texts and instruments. This was the turning point in the life of this semi-retired farmer, who was now fifty-eight years of age.

Without any guidance from others, Banneker absorbed the texts and learned to use the instruments to make simple observations and eventually to calculate ephemerides for almanacs. He completed the computations for his first almanac in April 1790 and submitted it to several Baltimore printers. One of them sent the calculations to Major Andrew Ellicott for review. At this time Major Ellicott was a young man of thirty-seven years of age who had earned a reputation as possibly the most important surveyor in the new republic. His accomplishments were many and he was widely acknowledged to be one of the most important figures in the practical sciences. No record has survived of his evaluation of Banneker's almanac, and it was not published. In November of the same year Ellicott forwarded the calculations to a member of the recently reorganized Pennsylvania Society for the Abolition of Slavery, which led to the subsequent publication of later issues. Banneker was greatly perturbed by the lack of success of his effort, but his interest in astronomy com-



Smithsonian Institution Photograph

Portrait of Benjamin Banneker at the age of 64, from the issue of his *Almanac* for 1795, printed for John Fisher of Baltimore. Note the spelling here as Bannaker.

pelled him to continue his studies. He undertook the calculation of an ephemeris for the following year.

During this period Ellicott had been engaged in the survey of the western boundary of New York, a project which he had initiated in September 1789 and on which he was assisted by his two younger brothers, Joseph and Benjamin. He completed the work late in 1790, and returned to his home and family in Philadelphia for a few months of rest.

While these events were in progress, a historic decision was being made elsewhere. The need for a national capital had become increasingly apparent during the decade that followed the cessation of hostilities and planning for it had been in progress for a number of years. The Congress had met in as many as eight different cities during the war years and the constant move from city to city became increasingly difficult. Various sites had been offered and several others considered, but it was not until 1783 that a site was tentatively selected. A proposal for a Federal capital to be under the jurisdiction of the Congress was included in the draft of the Constitution which was adopted by the Congress and ratified by the States in 1787. It was not until 1790 that Congress reached an agreement on the site. The States of Maryland and Virginia had agreed to contribute portions of their respective territories to form a new Federal Territory, eventually renamed the District of Columbia, in which the capital was to be built. On January 22, 1791, President Washington appointed Daniel Carroll, Thomas Johnson and Dr. David Stuart to serve as Commissioners to oversee the survey of the area as well as the design and construction of the city. Two days later, on January 24th, he issued a proclamation directing that a survey of a ten mile square be made and Major Andrew Ellicott was designated to make the survey. Within the next week, Ellicott was notified by Thomas Jefferson, Secretary of State, to proceed at once to the Federal Territory to undertake his new assignment. In Jefferson's directive the project was described in some detail. Ellicott was to run the first two lines to establish a point of beginning, from which he would lay out the four lines of experiment for the square.

Ellicott lost no time in making preparations for the project. His major problem was to find an assistant who had a practical knowledge of astronomy and was familiar with the use of instruments. His two younger brothers, Joseph and Benjamin Ellicott, whom he had trained for this purpose, were completing the survey in New York and would not be able to join him for several months. David Rittenhouse, with whom Ellicott had worked on occasion in the past, was



Smithsonian Institution Photograph

Portrait of Major Andrew Ellicott at the age of 45, from *Biographical and Historical Accounts of the Fox, Ellicott, and Evans Families*. . . by Charles W. Evans, Buffalo, 1882

advanced in years, in poor health, and much involved with his own projects in Pennsylvania.

Andrew probably then remembered George Ellicott, a younger cousin at Ellicott's Lower Mills, who had some experience in surveying when the mills were first established. Furthermore, he had made a hobby of astronomy, and would be qualified to serve his needs in the field. When he contacted George, the latter expressed regret that his business involvement with the Mills would not permit him to absent himself for the period required. It may have been George Ellicott who reminded the Major about Benjamin Banneker, who lived near the Mills and had recently taught himself in astronomy and also calculated an ephemeris. Banneker had recently retired from farming, because of increasingly poor health, to devote all of his time to his studies.

Andrew Ellicott realized that he had no alternative, but it was with serious hesitation that he considered the possibility. Banneker's age and infirmities might make it difficult for him to cope with the hardships of working in the field in the winter. In the course of subsequent conversations with Jefferson, Ellicott advised him of his need for trained assistance, and the problems he had encountered in recruiting for it. Jefferson encouraged him to employ Banneker for the preliminary survey until the younger Ellicott brothers became available.

Confirmation of this appointment occurs in Jefferson's letter relating to Banneker's almanac, which he addressed to the Marquis de Condorcet in the following year, and in which he commented about Banneker that²

I procured him to be employed under one of our chief directors in laying out the new Federal City on the Potomac....

It is not known whether Ellicott communicated with Banneker from Philadelphia, or waited until he next visited Ellicott's Lower Mills. He may have written to George asking him to speak to Banneker concerning the project, and received a confirmation of the latter's availability.

Having completed his preliminary preparations for the project and having packed his scientific instruments and field equipment, Ellicott set off on horseback to Ellicott's Upper Mills, where he planned to spend several days with his widowed mother, before pro-

² Letter from Thomas Jefferson to the Marquis de Condorcet dated August 31, 1791. *The Jefferson-Coolidge Papers*, Manuscript Collection, Massachusetts Historical Society, 7S.1.38-43.

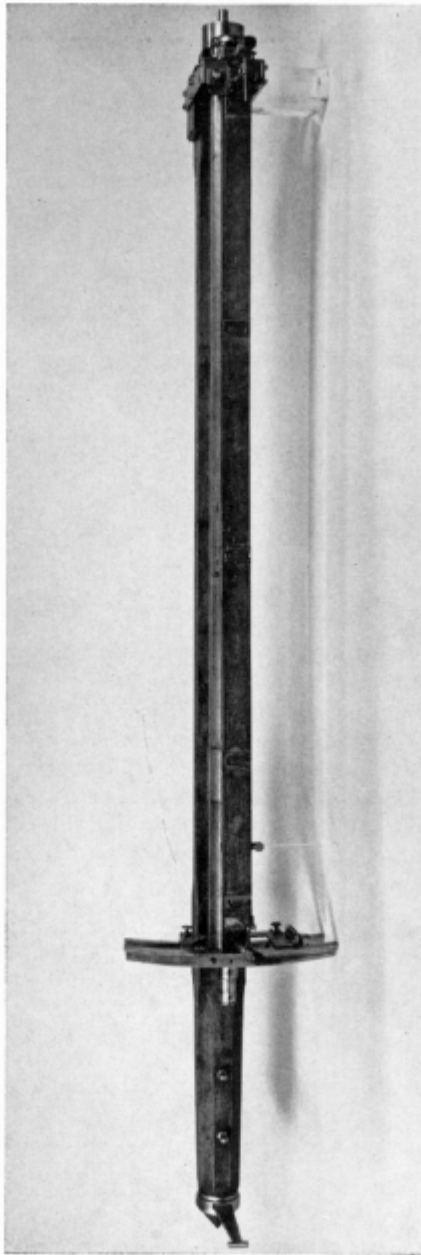
ceeding to the new Territory. While there he visited Banneker, who lived less than three miles away, in what is now the small community of Oella. His negotiations with Banneker were successful, and the latter was greatly excited by the prospect. Banneker hurriedly made his own arrangements. This was the very first time that he had ventured a distance of more than ten miles from his farm and it was a great event in his life. His two sisters lived with their families less than a quarter of a mile away and they promised to keep watch on his home and to care for his cow and other farm animals.

It was difficult for Banneker to determine his needs for the journey. He selected clothing and other possessions and then put them aside again. Meanwhile his good friends from the Mills, George Ellicott and his young bride, were almost as excited as Benjamin himself. George reviewed with Banneker what the assignment might involve in terms of his participation and pointed out that Major Ellicott owned the finest astronomical instruments in the United States at that time. Elizabeth Brooke Ellicott, George's young wife, who shared her husband's esteem and respect for the old farmer, made her own contribution. In the words of her daughter ³:

Under the impression that Banneker would fall under the notice of the most eminent men of the country, whilst thus engaged, ... [Elizabeth Brooke Ellicott] was careful to direct the appointments of his wardrobe, in order that he might appear in respectable guise, before the distinguished personages likely to be assembled there.

When the day arrived for the departure to the new Federal Territory, Banneker was packed and ready. Ellicott arrived shortly after dawn, and the two men rode on together, with their equipment and luggage packed behind their saddles and on an extra horse. They made an unusual pair as they rode along and probably drew comments from others they encountered on the way. Major Ellicott was tall and big-boned, with his abundant hair turned prematurely gray. He was dressed in the customary winter garb of the gentleman of the period, with a heavy coat and a tricorn hat. He favored the sober colors of his Quaker up-bringing. Banneker was considerably shorter than his companion, with a stocky build, and a corpulent figure. His

³ [Martha E. Tyson] *A Memoir of Benjamin Banneker, the Negro Astronomer. And Some Account of the People of the Times in which he lived, with Historical Extracts of Sketches of Primitive Maryland.* Manuscript, 1865, first draft of Banneker, *The African-American Astronomer. From the Posthumous Papers of Martha E. Tyson. Edited by her Daughter.* Philadelphia. Friends Book Association, 1884. Manuscript is owned by Mrs. Elizabeth Ellicott Fitzhugh Wilde, who kindly made it available for study.



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Large Zenith Sector made by David Rittenhouse for Andrew Ellicott
and used in the survey of the District of Columbia

profuse white curly hair contrasted sharply with his black complexion. His dress was neat and immaculate, although of dark and sombre colors.

They stopped along the way at a convenient tavern for their meals and finally reached their destination long after darkness had fallen. Since the base point of the survey was to be at Hunting Creek, Ellicott selected Alexandria in preference to Georgetown for his first base of operations. The travelers arrived on the evening of February 7, 1791, and probably obtained lodgings at Wise's Fountain Tavern on Cameron Street. Banneker was much impressed with his surroundings and he was excited by the sights and sounds of the city, a city which was considerably larger than any he had seen before. The Tavern was in itself a new experience. It had been a long day's journey and Banneker retired early, much wearied from his ride.

The new project did not have an auspicious beginning. The overcast sky under which Ellicott and Banneker had traveled broke into rain which continued for most of the week that followed. Ellicott was forced to control his impatience to begin work and he spent his time hiring field hands and woodcutters, purchasing field equipment and horses, and completing the many preparations that were necessary to the initiation of the work. Despite the overcast sky and occasional showers, he established a surveyor's camp near the apex of the proposed square, at Jones Point on the upper cape of Hunting Creek. A space for the camp was cleared on the highest available elevation in the area, the mess tents and sleeping tents were erected, and the stores disposed under cover.

Finally, the observatory tent was erected over a high stump of a tree cut down for the purpose and Ellicott personally supervised the installation of the instruments, with Banneker's assistance. The astronomical clock was set against the tree stump, inside the observatory tent. Also set up inside the tent was the zenith sector, the most important of the instruments, and probably the most accurate instrument in the country at that time, with which Banneker was to make the meridional observations. This instrument was of nearly six feet in length and Ellicott used it for the determination of latitude by the observation of stars near the zenith. Observations were made of about a half dozen different stars crossing the meridian at different times during the night and the observations were repeated a number of times. Ellicott had commented that when stars were so near the zenith they were affected by the different refractive powers of the atmosphere which derived from the varying degrees of density. He found that the error of the visual axis could be completely corrected by taking the

zenith distances of the stars with the plane or face, of the instrument both east and west.

The figures derived were averaged, corrected for refraction, aberration and nutation applied, and then compared with published star catalogues. From this comparison the latitude was determined, based on each of the stars observed.

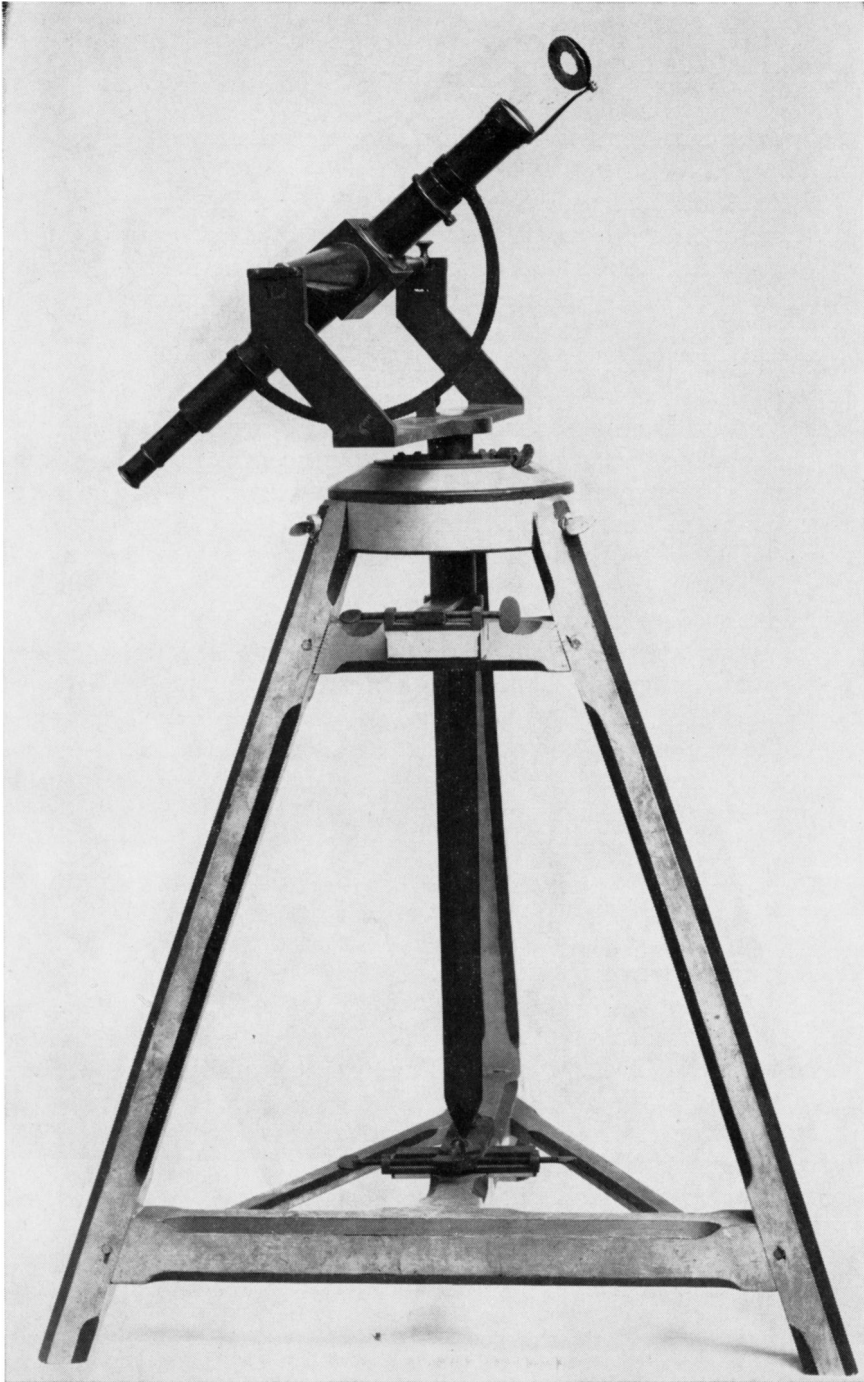
The apparatus included a second zenith sector of much smaller size, having a nineteen inch radius which was useful for the same purpose but having less accuracy. Its great advantage was its portability. Both of these instruments had been made for Ellicott by David Rittenhouse and modified by Ellicott.

Next of importance was the transit and equal altitude instrument which Ellicott would use himself in the field. Ellicott had constructed it himself, in 1789, based on the design described by Le Monnier in his *Histoire Celeste*, and had already used it to good purpose in running the western boundary of New York State.

Ellicott customarily used three telescopes in his field work. The largest was an achromatic telescope made by Dollond having a terrestrial eyepiece which magnified about sixty times, in addition to several eyepieces for celestial observations providing magnification of from 120 to 300 times. He also used two smaller achromatic telescopes with sliding tubes for taking signals, with which he made observations of the occultations and eclipses of the satellites of Jupiter. The time of either the eclipse or appearance of one of the moons from behind the planet was recorded, the time later compared with the time that this same event had occurred at Greenwich, and the difference converted into longitude.

His smaller equipment included a circumferenter of eight inches radius made by George Adams for taking horizontal angles, a regulator clock which he had made himself in 1784 and several sextants, one of seven inches radius made by Jesse Ramsden, which he used in taking lunar distances. A plain surveying compass made for him by Benjamin Rittenhouse, an artificial horizon, thermometers for taking temperature readings, two stop watches with seconds hands, and two sets of drafting instruments completed the scientific equipment. Ellicott also had two copper lanterns with special slits of his own design which he used for tracing meridians and giving the directions of lines when he determined them at night by means of his celestial observations. Two two-pole chains were also part of his field equipment.

Once the position of the observatory point had been established by observations made with the zenith sector, a suitable location was



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Transit and Equal Altitude Instrument used by Andrew Ellicott in the
survey of the District of Columbia

derived for commencing operations, at which the transit instrument was placed.⁴

It was Banneker's assignment to assist Ellicott in the use of these instruments in the observatory tent as well as to participate in observations made in the field. One of his major responsibilities was to maintain the clock, winding it, checking its rate, adjusting the pendulum. Ellicott had consistently had problems keeping his astronomical clock accurate and this was one of Banneker's prime assignments.

Ellicott was accustomed to working with his two younger brothers, for they worked in the field while he concentrated his attention on the use of instruments in the observatory tent. He was required to revise his procedures, however, because Banneker proved to be more useful with the astronomical instruments while he ran the lines.

Ellicott made his first observations on Friday, February 11th, and by the end of the next day the first two lines had been completed. The work went very well, although Ellicott found himself hampered by the absence of his two brothers, who were experienced in the work. He customarily had a crew of twenty men in the field, but he was forced to satisfy himself with six men since he had been unable to recruit any others having any experience.

Ellicott's procedure for laying out the square was a simple one. He first traced a meridian at Jones Point on the western side of the Potomac River. Next he laid off a 45° angle from this meridian towards the northwest and continued in that direction in a straight line for the distance of ten miles. Taking the point of juncture of this line he next made a 90° angle with a straight line which he carried in the northeasterly direction for the same distance of ten miles. At the termination of this second line he repeated his procedure and made another 90° with another line which he carried to the southeast. Finally he ran a straight line from the terminal point at Jones Point to meet with the end of the third line. These lines were measured by means of the chain, which Ellicott personally examined and

•The foregoing descriptions are derived from Ellicott's own account of his survey of the boundary between the United States and the Spanish possessions in 1789. See Andrew Ellicott, *The Journal of Andrew Ellicott, Late Commissioner on Behalf of the United States . . . for Determining the Boundary Between the United States and the Possessions of His Catholic Majesty . . .*, Philadelphia, 1803. Reprinted by Quadrangle Books, Chicago, 1962.

He used the same procedures and some of the same instruments, as well as others that were comparable, in his survey of the Federal Territory. A number of these instruments have been preserved in the National Museum of History and Technology, Smithsonian Institution.

corrected at the end of each day to ensure that none of the links had opened or that it was in any other way changed. He used a plumb bob from his chain when the ground underfoot proved to be too uneven, and he traced the chain by means of his transit and equal altitude instrument.

Exactly one week after his arrival, Ellicott made his first report to the Secretary of State, in which he described the conditions encountered and the work performed.⁵ He indicated that he was about to undertake a rough survey, after having already completed the first two lines to establish the base point. In a letter to his wife written on the same evening he commented that he had been received with great politeness in Alexandria.

The next stage of the operation was not as simple. Ellicott found himself constantly involved in the myriad details of the daily operation of the survey, which wasted his time and reduced his own work considerably. As an additional frustration, he succumbed to an attack of influenza which proved to be most painful and distracting and further reduced his activity. He continued his work in the field despite his illness and his health did not recover completely until the middle of March. More than anything else, he felt the absence of his experienced assistants. He had in the meantime moved from Alexandria to new lodgings in Georgetown, where he also maintained a small office in the home of Mr. William Prout, one of the proprietors.

Banneker's name is not mentioned in Ellicott's communications at any time, and he probably remained with the other men and assistants in the survey camp in the field. The old man's infirmities were aggravated by the cold and the exposure, but he had no alternative and he made the best of his circumstances. He was intrigued and still overwhelmed by the unique opportunity which had been offered to him, and he found great pleasure in working with Ellicott's instruments in the observation tent. The little leisure he was able to reserve for himself he spent in sleep and in working out the outline for a second ephemeris because he was determined to achieve its publication after his return from the survey. The field experience he was gaining was of immeasurable value to him in his astronomical work.

His greatest problem was due to his erratic schedule, which broke up his day and night so that he was forced to seek his rest and his

⁵Letter from Andrew Ellicott to Thomas Jefferson dated February 14, 1791. From a draft in the possession of descendants. Quoted by Sally K. Alexander, "A Sketch of the Life of Major Andrew Ellicott," *Records of the Columbia Historical Society*, Volume 2, 1899, pp. 172-173.



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Plain Surveying Compass made by Benjamin Rittenhouse for Andrew
Ellicott and used in the survey of the District of Columbia

leisure from whatever moments became available to him. Because of the nature of the observations which were required for the survey, the most important time for his work was at evening and at night, recording what he observed and making his calculations from them. Finally, as the night ended, and Banneker was ready to seek some rest, Major Ellicott arrived before daylight, and before proceeding to the field work, he was in the habit of visiting the observation tent to look over Banneker's notes for his own guidance. While the other men were beginning their own work for the day, Banneker's work was finished, and he retired to sleep. He had to be awakened in time to take observations of the sun at noon, however, to establish the time for the observatory clock, and then he could rest until darkness came again.

Banneker and the other men on the survey found Ellicott to be a hard taskmaster for he was dedicated to his work. He arose while it was still dark each morning, completed his breakfast, and rode to the survey camp from his lodgings by the first light of morning. He worked until bedtime seven days a week. The extreme changes of weather and the hazardous nature of the undertaking made the experience less than pleasant for Banneker as well as for the other men. He had the advantage of working in the observation tent most of the time, however, and he spent little time in the field with the surveyors. Ellicott provided a vivid account of the terrain and of the conditions in a letter to his wife, in which he commented that the weather was extremely hot and dry, due to lack of rain, and that the land through which they were working was extremely poor. They found little fruit but huckleberries and spent all of their free time in the camp, which he described as "a most eligent camp and things are in fine order"⁶

In later communications to his wife, Ellicott reported that he had encountered more than the usual number of problems in this project. In addition to his own illness, and the discomforts of the weather and the terrain, he had lost a number of his men during the past summer. Some were killed accidentally by falling trees and others died as a result of illness and other causes.

Meanwhile, the undertaking was watched with interest from the very beginning by the residents of Alexandria and Georgetown.⁷ A

⁶ Letter from Andrew Ellicott to Sarah B. Ellicott dated March 20, 1791. The original was in the possession of the family, and quoted in Sally K. Alexander, *A Sketch*, p. 173. See also Fred E. Woodward, "A Ramble Along the Boundary Stones of the District of Columbia With a Camera," *Records of the Columbia Historical Society*, Volume 20, 1917, pp. 65-66.

⁷ Letters from Andrew Ellicott to Sally Ellicott dated August 9th and November 9th, 1791. *Manuscripts Division*, Library of Congress.

news item datelined February 23rd from Georgetown published in the Philadelphia press reported that⁸

Mr. Ellicott, we learn, finished the first line of his survey of the Federal Territory in Virginia yesterday, and crossed below the Little Falls, the river Potomack, on the second line.

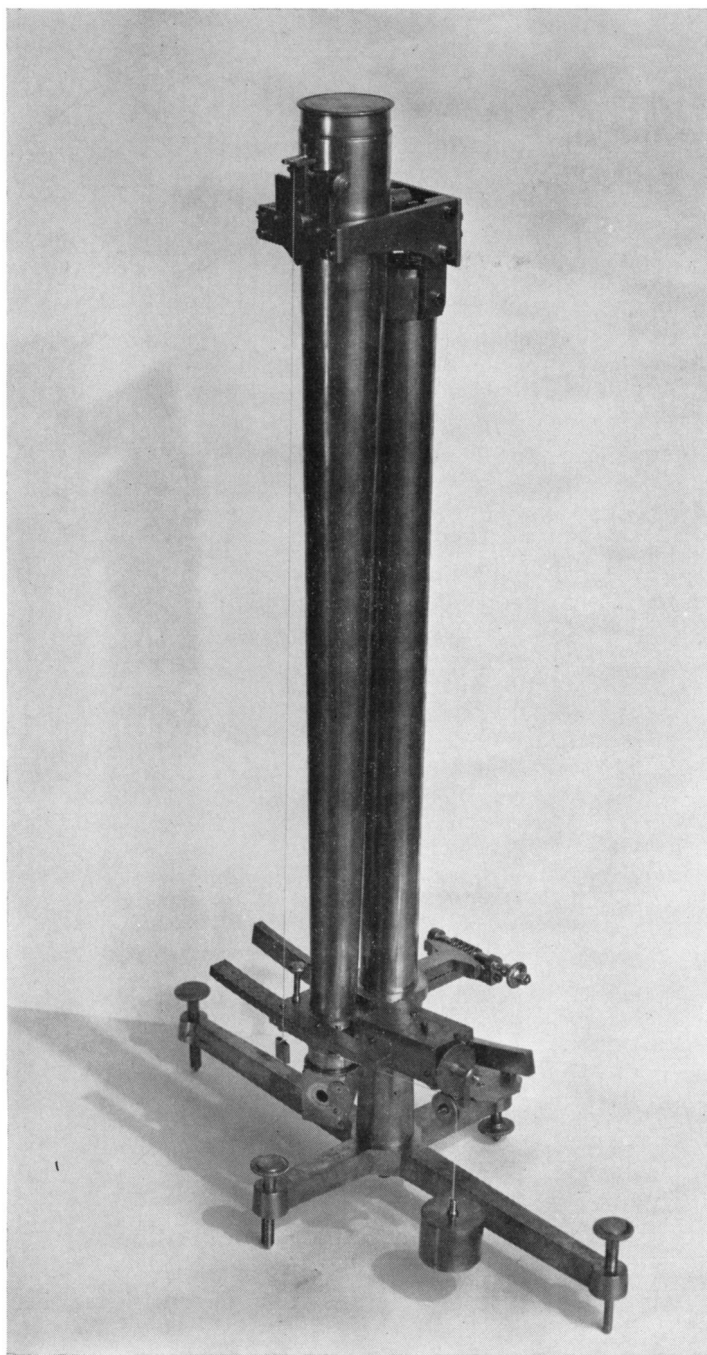
At approximately the same time that this item was published, Jefferson notified Major Charles Pierre L'Enfant of his appointment to design the new capital city. L'Enfant, a French soldier and engineer, had come to the American colonies at the same time as the Marquis de Lafayette. After having served with the Continental Army, he had been selected to remodel the temporary quarters of the Federal Government in New York City, and this was to be his next major assignment. L'Enfant arrived at Georgetown on March 9th, a month and a week after Ellicott had begun the survey. His instructions were sufficiently specific in the letter he received from Jefferson⁹:

You are advised to proceed to Georgetown, where you will find Mr. Ellicott employed in making a survey and map of the Federal territory. The special object of asking your aid is to have drawings of the particular grounds most likely to be approved for the site of the federal town and buildings. You will therefore be pleased to begin on the eastern branch, and proceed from thence upwards, laying down the hills, valleys, morasses, and waters between that and the Potomac, the Tyber, and the road leading from Georgetown to the eastern branch, and connecting the whole with certain fixed points of the map Mr. Ellicott is preparing....

Considerable confusion developed among subsequent writers concerning the relative roles of Ellicott, L'Enfant and Banneker in the survey of the Federal City. Ellicott was, contrary to popular misconception, the first to receive an appointment to the project. His assignment was specifically to produce a survey of a ten-mile square within which the national capital was to be designed and laid out by L'Enfant. Ellicott and L'Enfant each worked independently under the supervision of the Commissioners appointed by Washington. After L'Enfant's subsequent dismissal, Ellicott was assigned the dual responsibility for continuing L'Enfant's work on the design of the city, and layout of public buildings, streets and property lots, in addition to completing his survey. Banneker was employed directly by Ellicott and did not at any time, as far as can be determined, work

⁸ *Gazette of the United States* (Philadelphia), March 5, 1791.

⁹ Letter from Thomas Jefferson to Charles Pierre L'Enfant dated March 1791. *The Writings of George Washington*, Volume III, p. 221.



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Small Zenith Sector used in the survey of the District of Columbia

with or for L'Enfant. Some of the confusion may have been the result of the assignment of Benjamin Ellicott, Major Andrew Ellicott's younger brother and an assistant surveyor, to assist L'Enfant in preparing a sketch of the city in the summer of 1791. Banneker undoubtedly met L'Enfant during the course of his stay on the project, however.

The only surviving documentary evidence of Banneker's involvement with the project, other than his own oral accounts to his friends, is a newspaper announcement which appeared on March 12, 1791¹⁰:

Some time last month arrived in this town Mr. *Andrew Eliicot*, a gentleman of superior astronomical abilities. He was employed by the President of the United States of America, to lay off a tract of land, ten miles square, on the Potomack, for the use of Congress; is now engaged in this business, and hopes soon to accomplish the object of his mission. He is attended by *Benjamin Banniker*, an Ethiopian, whose abilities, as a surveyor, and an astronomer, clearly prove that Mr. Jefferson's concluding that race of men was void of mental endowments, was without foundation.

Wednesday evening arrived in this town, Major *Longfont*, a French gentleman, employed by the President of the United States to survey the lands contiguous to George-Town, where the federal city is to be built. His skill in matters of this nature is justly extolled by all disposed to give merit its proper tribute of praise. **He** is earnest in the business, and hopes to be able to lay a plat, of that parcel of land, before the President, upon his arrival in this town.

This article has been widely quoted in subsequent accounts of the establishment of the city of Washington, and it also was used late in the Nineteenth Century as an item of evidence in the litigation of the Potomac Flats Case relating to the first division of lots laid out in the city. As well as can be determined, however, not a single copy of the March 12th issue of the Ledger has survived, although the article has been quoted again and again by writers. Its apparent authenticity is bespoken, however, by its republication verbatim with a George-Town byline and the March 18th date in *The Maryland Gazette* a week later.¹¹ This article constituted the first public notice taken of Banneker.

The major event during the course of the survey was the arrival of President Washington to make an inspection of the work in progress and to meet with the thirteen original proprietors to arrange for

¹⁰ *The Georgetown Weekly Ledger*, March 12, 1791.

¹¹ *The Maryland Gazette*, March 18, 1791.

the transfer of such parts of their farms as was required for the making of streets and for public buildings and reservations. He met with the three Commissioners upon his arrival in the morning and then proceeded to the site. He dined with the principal citizens at Suter's Tavern where he examined the surveys prepared by Ellicott and the designs produced by L'Enfant. He visited the site on the following day and departed the next morning. He was satisfied with the progress, but on March 31st the Commissioners directed Ellicott to continue with the preliminary survey of the square as soon as possible. Within two weeks he was able to inform them that he had run two lines to locate the beginning of the so-called "four lines of experiment."

On April 15th the Commissioners, in company with Ellicott and many spectators who had come to watch, took part in a ceremony to install the stone marker at Jones Point. The event was reported not only locally by the Alexandria and Georgetown press, but by some of the newspapers in the larger cities as well ¹²:

The mayor and the commonality, together with the members of the different lodges of the town, at 3 o'clock waited on the commissioners at Mr. Wise's, where they had arrived. After drinking a glass of wine to the following sentiment, viz., "May the stone we are about to place in the ground remain an immovable monument of the wisdom and unanimity of North America," the company then moved on to Jones Point in the following order:

First, the Town Sergeant; second, the Hon. Daniel Carroll and the Mayor, third: Mr. Ellicott and the recorder; fourth, such Aldermen and Councilmen as were not free Masons; fifth, strangers; sixth, the master of Lodge No. 22, with Dr. David Steward [sic] at his right and Rev. James Muir at his left. Lastly the citizens, two by two.

When Mr. Ellicott had ascertained the precise point from which the first line of the District was to proceed, the master of the lodge and Dr. Steward, assisted by some of the other brothers, placed the stone; after which a deposit of corn, wine and oil was made upon it and the following observations were delivered by the Rev. Muir:

"Of America it may be said as it was of Judea of old, that it is a good land and large, O America, and prosperity within thy palaces. May jealousy, that green-eyed monster, be buried deep under the work which this day we have completed, brethren and gentlemen."

Banneker's presence at the ceremony was not noted in the news account, but there can be little doubt that he was in attendance as a spectator. With the installation of the foundation stone as the first marker, the formal survey of the new national capital had begun.

¹ *The Alexandria Gazette*, April 21, 1791.

The work proceeded satisfactorily, and Major Ellicott was particularly pleased to have his brothers with him again. The younger one, Benjamin Ellicott, had arrived at the beginning of April, was followed soon thereafter by Joseph, and both were appointed assistant surveyors. Now that Ellicott had scientifically-trained assistance, Banneker was ready to return to his farm and it was at this point in time that he terminated his association with the project. He probably waited until Major Ellicott was ready to make another of his periodic visits to his family at Philadelphia and accompanied him part of the way.

The only other account of Banneker's participation in the survey occurs **in** several of the writings of George Ellicott's daughter, Martha Ellicott Tyson. In a sketch assembled from notes made in 1836 and read before the Maryland Historical Society by a relative in 1854, she noted that¹³

Banneker was but once absent, at any distance, from his domicil. An appointment having been made after the adoption of the Constitution, in 1789, of commissioners, to run the lines of the District of Columbia -then called the "Federal Territory," they wished to avail themselves of his talents, induced him to accompany them in the work and retained him with them until the service was completed.

In her later account of the same episode, Martha Tyson elaborated somewhat further:¹⁴

Major Ellicott selected Benjamin Banneker as his assistant upon this occasion, and it was with his aid that the lines of the Federal Territory, as the District of Columbia was then called, were run.

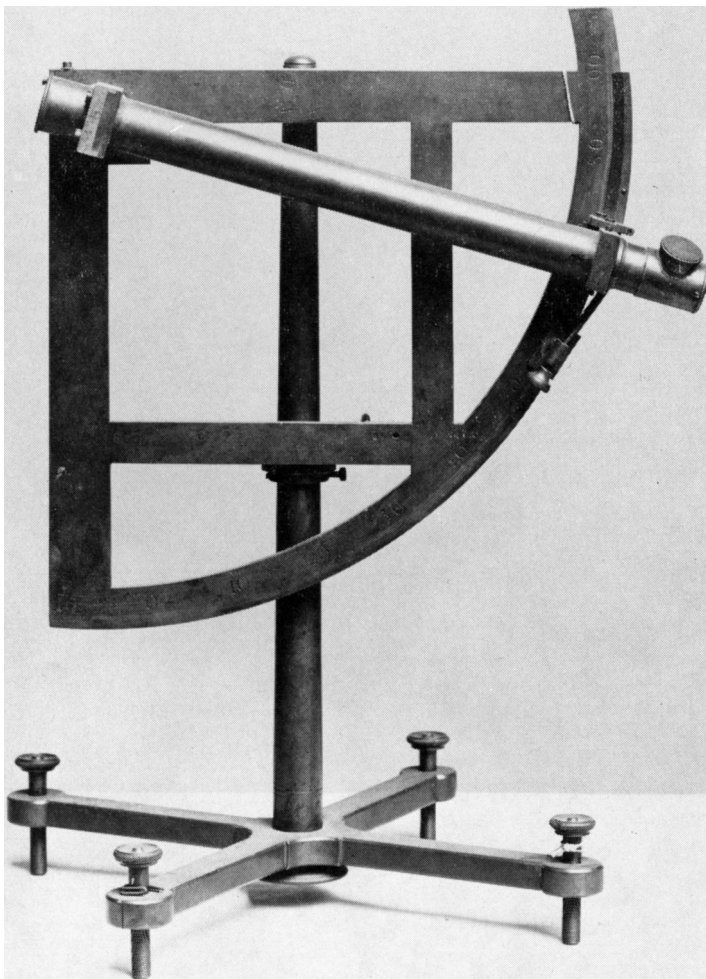
It was the work, also of Major Ellicott, under the orders of General Washington, then President of the United States, to locate the sites of the Capitol, President's house, Treasury, and other public buildings. **In** this, also, Banneker was his assistant.

Banneker's deportment throughout the whole of this engagement was such as to secure for him the admiration and respect of the Commissioners and their staff. His striking superiority over all men of his race whom they had met, led them to disregard all prejudice of caste, and converse freely with him, and enjoy the clearness and originality of his remarks.

He was invited to sit at table with the engineer corps, but, as his characteristic modesty induced him to decline this, a separate table

¹³ [Martha E. Tyson], *A Sketch of the Life of Benjamin Banneker. From Notes Taken in 1836*, Baltimore, John D. Toy, 1854, pp. 11-12.

¹⁴ [Martha E. Tyson], *Benjamin Banneker, The Afric-American Astronomer, From the Posthumous Papers of Martha E. Tyson. Edited by Her Daughter*, Philadelphia. Friends Book Association, 1884, pp. 38-39.



*National Museum of History and Technology
Smithsonian Institution*

Portable Quadrant for field use, owned by Andrew Ellicott

was prepared for him in their dining-room; his meals being served at the same time with theirs.

On his return home, he called at the house of his friend George Ellicott to give an account of his engagements. He arrived on horseback, dressed in his usual costume, a full suit of drab cloth, surmounted by a large beaver hat.

He was in fine spirits, seeming to have been reanimated by the kindness of the distinguished men with whom he had mingled.

With his usual humility he estimated his own services at a low rate.

One matter, personal to himself, gave him great pleasure in the retrospect. *He had not, during his absence, tasted either wine or spiritous liquors.*

He had experienced the fact that it was unwise for him to indulge, ever so slightly, in stimulating drinks. On this occasion he said, "I feared to trust myself even with wine, lest it steal away the little sense I have"

Immediately upon his return, Banneker turned all his attention to the completion of his calculations for an ephemeris for the year 1792. The fact that he had undertaken some work on it in the field is verified by the drawing for a projection of a solar eclipse which he made in his manuscript journal and which was accompanied by the notation¹⁵ :

This projection I laid down for April the Third 1791 when the Sun rose Centrally eclipsed at the City of Washington this is a back tryal to See how my present method would agree with the former. ...

One additional document has survived which confirms Banneker's participation in the survey. In his letter to Thomas Jefferson dated August 6, 1791, with which he enclosed a manuscript copy of his calculations for 1792, Banneker noted that¹⁶

And altho I had almost declined to make my calculation [of an almanac] for the ensuing year, in consequence of that time which I had allotted therefor being taken up at the Federal Territory, by the request of Mr. Andrew Ellicott, yet finding myself under several engagements to printers of this state, to whom I had communicated my design, on my return to my place of residence I industriously applied myself thereto....

There is no information concerning the date of Banneker's return to Baltimore County but it seems likely that it was not later than the

¹⁵ *Banneker's Manuscript journal*. Page facing calculations for May 1792. Courtesy Dr. Robert T. Fitzhugh.

¹⁶ Letter from Benjamin Banneker to Thomas Jefferson dated August 6, 1791. *The Jefferson-Coolidge Papers*, Manuscript Collection, Massachusetts Historical Society.

end of April 1791. On June 10th George Ellicott's brother, Elias Ellicott, wrote to James Pemberton at Philadelphia to inform him that Banneker had completed an ephemeris for 1792 and that it was ready for the press.¹⁷ Considerable work was involved in the preparation of the ephemeris and although Banneker admittedly had begun to collect data and make calculations for it while still in the field in the Federal Territory, the major part of the project was accomplished in the short period after his return to his farm presumably at the end of April and the beginning of June.

Numerous records related to the survey of the Federal Territory have been preserved in the files of the Public Buildings and Grounds in the National Archives, in the papers of the State Department, and in the Manuscript Division of the Library of Congress, but in none of them does Banneker's name appear. A survey of all known surviving letters of Andrew Ellicott and of Charles Pierre L'Enfant have likewise failed to reveal his name. This lack of notice effectively dispells the legends that after L'Enfant's dismissal Ellicott was able to reconstruct his plan of the city as a result of Banneker's remarkable memory, and that Jefferson had invited Banneker to lunch with him at the White House.

The lack of documentation of Banneker's participation in the project may be laid to a series of unusual circumstances. He may have been mentioned in the field notes, astronomical observations, records of accounts and disbursements for the field camp, and Ellicott's personal diaries. A number of these papers were owned in the mid-Nineteenth Century by his grandson, Joseph C. P. Kennedy, of Washington. The papers were inherited by Kennedy's daughter, Sally Kennedy Alexander (Mrs. T. K. Alexander) and served as the source of her biographical sketch of Major Ellicott which was published in the *Records* in 1899.¹⁸ Mrs. Alexander subsequently made the papers available to Mrs. Catherine Van Cortlandt Mathews for the preparation of the family-sponsored biography of the surveyor, which was published in 1908.¹⁹ Communications between this writer and numerous descendants in recent years have failed to bring this material to light and it must be assumed that it is still preserved in the hands of an unidentified member of the family.

Some consideration must also be given to the fact that on two oc-

¹⁷ Letter from Elias Ellicott to James Pemberton dated June 10, 1791. Historical Society of Pennsylvania, *Pennsylvania Abolition Society Manuscripts*, Volume III, p. 55.

¹⁸ Sally K. Alexander, "A Sketch of the Life of Major Andrew Ellicott," *Records of the Columbia Historical Society*, Volume 2, 1899, pp. 172-174.

¹⁹ Catherine Van Cortlandt Mathews, *Andrew Ellicott, His Life and Letters*, New York, The Grafton Press, 1908.

casions during the survey, Major Ellicott's papers were confiscated or stolen and some of them were not returned. The records of the work in progress were removed from Ellicott's office in Georgetown in 1793 by order of the Commissioners during one of his several controversies with them. At another time Ellicott accused James R. Dermott, one of the assistant surveyors, with having stolen some of his papers, which were not returned to him. These incidents open up the possibility that other records of the survey, in which Banneker may be mentioned, may yet survive in an official repository and have evaded all efforts to find them.²⁰

Despite the lack of confirming documentation, Banneker's participation in the survey of the ten-mile square is established beyond doubt. His achievement as a self-taught astronomer capable of making the observations and calculations required by Major Ellicott in this project is comparable to his unusual accomplishment in the calculation of ephemerides for eleven years. Of these, six were published in a total of twenty-nine separate editions. Banneker was fifty-eight years of age when he undertook to teach himself in mathematics and astronomy, and the achievements of the retired tobacco planter within the short space of the final seventeen years of his life are sufficiently significant to ensure his permanent place in the history of American science.

²⁰ Letters from Andrew Ellicott to President Washington dated June 29, 1793 and February 28, 1794 and the Commissioners' reply dated March 23, 1794. U. S. National Archives, *Record Group 42*, Public Buildings and Grounds. See also "Letter from Andrew Ellicott to Robert Patterson, in Two Parts.," *Transactions of the American Philosophical Society*, Volume IV, pp. 32-66.