

## **Fulton, Hamilton** <sup>[1]</sup>

### **Fulton, Hamilton**

by George Stevenson, 1986

#### **d. 1834**

Hamilton Fulton, civil engineer, was born in Great Britain into a Scottish family presumably connected with the engineering family of that name in Glasgow. He studied under John Rennie (1761–1821), the Scottish engineer noted for his work in London, before working under Thomas Telford (1757–1834), the builder of Ellesmere Canal (1793), Caledonian Canal (1802–22), and Gotha Canal (between the Baltic and North seas, 1808–10). Under these masters Fulton gained experience in computing specifications for and designing canals <sup>[2]</sup>, locks, and bridges; in draining marshes <sup>[3]</sup> and fens; and in constructing turnpike roads. His employment at Malta and Bermuda by the British Board of Admiralty gave him experience in constructing harbor jetties and breakwaters and taught him something of hydrography.

While living in Charles Street, London, in 1819, Fulton made the acquaintance of Peter Browne <sup>[4]</sup>, of North Carolina, who was then in England looking for a principal engineer for the state. Browne persuaded Fulton to undertake the supervision of projected internal improvements <sup>[5]</sup>, and in the early summer of 1819 Fulton moved with his family to North Carolina. He was accompanied by his friend and fellow pupil under Rennie, Robert H. B. Brazier <sup>[6]</sup>, who had been engaged by Browne as assistant engineer. Fulton and Brazier arrived in Raleigh in July 1819 and signed contracts with the state on 19 July.

The two engineers set about their business immediately. Fulton examined the principal coastal inlets, the sounds, and the primary rivers of the state with an eye to practical improvements to navigation, whereas Brazier was responsible for making surveys and delineating them in plats and maps. During 1820, Fulton fully investigated a method of overcoming the difficulty of navigating vessels through Roanoke Marshes in the passage between Albemarle and Pamlico sounds (a feat requiring a good wind blowing almost due north). To rectify this deficiency so as to improve coastal navigation in those waters, it was proposed to reopen Roanoke Inlet, which had been closed since 1795. Fulton's report on the subject is marked by a clear understanding of the nature of the contemplated task and conveys to the reader a ready appreciation of Fulton's skill. He offered specific proposals for employing natural and mechanical forces to keep the inlet open once it was reestablished as a viable passage for vessels; he understood the necessity for preserving the marshes; and he was careful to avoid any deleterious effect that the projected work could have on vegetation. Though the reopening of Roanoke Inlet, like so many other of the state's projects, failed of realization, Fulton's report and specifications remained the basis for state planning for the next twenty years.

Neither Fulton nor Brazier was satisfied with the operation of the internal improvements program of North Carolina. Political machinations involving internal improvements, a depressed economy that prevented execution of sound projects, the willingness of the Board of Internal Improvements and the legislature to sacrifice quality in a search for inexpensive engineering work, and the illusionary expectations of the general public that demanded immediate results from the improvements programs hindered the effectiveness of the two engineers. At the end of his first year in North Carolina, Fulton gave notice of his resignation as principal engineer effective 18 Jan. 1821. He was prevailed upon to remain with the state's program, however, and continue his work. In April 1821 Fulton designed the Roanoke Canal Aqueduct. Originally conceived as two elliptical arches with 30-foot spans, the design was eventually altered to a single elliptical arch with a 30-foot span built into a 110-foot-long aqueduct spanning Chockoyotte Creek in Halifax County <sup>[7]</sup>. Constructed of dressed stone, the Roanoke Canal Aqueduct is Fulton's best known work in North Carolina; it still stands in remarkably good condition despite a century of neglect. This visible and impressive testimony to Fulton's skill and art has been entered on the National Register of Historic Places. Unfortunately, his equally impressive bridge of eight elliptical stone arches over Dan River, begun in 1825 at Milton, Caswell County <sup>[8]</sup>, has not survived.

During his work on Roanoke Canal, Fulton had occasion to consult with Thomas Moore, the Virginia engineer from whom he appears to have gained a favorable impression of Virginia's program of internal improvements. In any event, when that state's office of principal engineer fell vacant through Moore's death, Fulton applied to Virginia's Board of Public Works for appointment to the position in 1822. He was unsuccessful, and for the next three years he remained principal engineer to the state of North Carolina.

During 1822 and 1823 Fulton continued to supervise practically every major navigation and transportation scheme in the state, both of a public and private nature. He drew up specifications for dams and locks for the Neuse River Navigation Company <sup>[9]</sup>, continued to supervise execution of his plans for the Roanoke Navigation Company, renewed efforts to perfect the locks and canals of the Clubfoot and Harlowe Creek Canal, and planned the establishment of the Brown and White Marsh (Columbus County <sup>[10]</sup>) Drainage Company. Much of Fulton's effort was expended to correct the ill-judged and ruinous proceedings of the Cape Fear Navigation Company <sup>[11]</sup>. The company had contracted piecemeal work at diverse, scattered locations, and had departed the bed of the river. As a result no section from which revenues could be drawn had been completed, and the company was nearly bankrupted by the expenses incurred in erecting an artificial watercourse that offered no advantage over cheaper improvements of the natural flow of the river. As with navigation

companies, so with turnpikes. Fulton examined, reported on, and made recommendations relating to the Wilkesboro-Tennessee Turnpike, the [Swannanoa Gap Road](#)<sup>[12]</sup>, and the Cherokee Road. He proposed a new network of state roads in [Buncombe County](#)<sup>[13]</sup>, outlined plans for a turnpike that would carry produce from the [Roanoke River](#)<sup>[14]</sup> estuary to Pamlico Sound, and prepared elaborate specifications for a turnpike from Fayetteville to the Virginia Line. In this connection it may be worthwhile to note Fulton's advice to the board in 1823 in which he advocated that a system of state roads, county roads, and private roads be classified, financed, and maintained in the manner now current in the state.

By 1824 the failure of many of the private stock companies had convinced the Board of Internal Improvements of the necessity of concentrating on one important project at a time. Consequently, during 1824 and 1825 Fulton was directed by the board to devote his efforts to the improvement of [Cape Fear River](#)<sup>[15]</sup>. In 1823 he had designed embankments and jetties, and in 1824 he oversaw their construction. In addition, he engaged a steam engine to reduce the flats that effectively blocked the estuary of the river, and secured machinery for removing the logs and sunken trees that spoiled the navigational potential of the river between Fayetteville and Wilmington.

But Fulton was not destined to complete his ideas for improving Cape Fear River. The state legislature, frightened by the failure of many of the private navigation companies, and exercised by popular dissatisfaction with the course of internal improvements in North Carolina, proceeded to take measures that Fulton considered inimical to his professional interests. Not only did it completely reorganize the Board of Internal Improvements during its 1824 session, but it also directed that the principal engineer be hired out to other states on a part-time basis. In January 1826 Fulton resigned his office.

The state of Georgia, which had attempted to engage Fulton under a part-time arrangement in 1822, now negotiated with him for full employment. As a result, Fulton sold his real and personal property in Raleigh on 16 Mar. 1826, and shortly afterward moved to Georgia. The situation in Georgia was not dissimilar to that in North Carolina, and Fulton discovered that he had been engaged by a discredited board. By the end of 1826 he found himself in Milledgeville, a private, rather than a public, engineer. At the close of 1828 he returned to London where, until his death, he worked and taught engineering to his son Hamilton Henry Fulton (1813–86), subsequently a well-known London engineer.

Fulton's wife Sarah, a native Londoner, was a handsome, red-haired woman who was admired for her superior mind and praised for her graceful mien and open and unaffected manners. When in 1822 it was feared that Fulton would leave North Carolina, [David Lowry Swain](#)<sup>[16]</sup> wrote to a correspondent that Mrs. Fulton "is worth \$1000 per annum to Raleigh, & the society of the place would suffer an irreparable loss by her removal." Fulton was described by Swain as blunt but of very friendly disposition and "one of the most scientific men in the county." In addition to their son [Hamilton Henry](#)<sup>[17]</sup>, the Fultons had two daughters, Emily M. and Julia Jane, the latter of whom was born in Raleigh in October 1823. Fulton and his family were [Anglicans](#)<sup>[18]</sup> who communicated with Christ Church, Raleigh, during his years in North Carolina.

Fulton's surviving writings are to be found in the annual reports of the North Carolina Board of Internal Improvements from 1820 to 1825, except for his *Report of Sundry Surveys, Made By Hamilton Fulton, Esqr., State Engineer Agreeably to Certain Instructions from Judge Murphey . . . and Submitted to the General Assembly at their Session in 1819*, which in 1819 was separately published in Raleigh as a seventy-page pamphlet. Delineation of his surveys of Croatan and Roanoke sounds with the embankments and inlet (1820), the stage road from Fayetteville to the Virginia line (1822), and the road from Salem to Fayetteville (1823) survive in the drawings of Robert H. B. Brazier. No maps and drawings from the hand of Fulton are known to have survived, though it is assumed that some may still exist among family papers in Great Britain.

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[Stevenson, George. "Hamilton Fulton and Robert H.B. Brazier." \*American Public Works Association Reporter\* 50, no. 7 \(July 1983\).](#) [22]

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