

National Park Service  
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Salem Maritime National Historic Site  
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# Pickled Fish and Salted Provisions

## *Historical Musings from Salem Maritime NHS*



### **Are We There Yet?**

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On the cover: NPS volunteer Aaron Gralnik often asks the question under discussion during *Friendship* sails.

# Travel Expectations during the Age of Sail

*“Are we there yet?” The question drives parents to distraction, and impatient children to frustration.*

*The question has always existed, but expectations of how long it actually takes to get “there” have changed radically since the early nineteenth century. This is, of course, a result of technological advances unknown to almost all of the world’s cumulative population since the advent of motion.*

*A further complication of the issue in times past was determining precisely where you wanted to be when you finally got there.*

## **Overland Travel During the Age of Sail**

During the Age of Sail overland travel was determined by the distance that could be traversed in a day by foot or on a horse. A person typically strolls along at about three miles per hour, walks briskly or marches at about four miles per hour, and may run some distance at five miles per hour. Distance traveled was a product of conditions, expectations, and endurance.

Riding a horse gave a range of speed from around three to twenty miles per hour. Naturally, the faster you rode, the sooner the horse tired out. However, horse racing had been a major source of entertainment for centuries and a fast horse was a very desirable possession, particularly when gambling was involved. The quest for speed has always lurked deep within the heart of man.

A four to six horse team (based on horse-drawn artillery data) could haul a substantial load at a walk just over three miles per hour, at a trot of about seven miles per hour, and almost fourteen miles per hour at a gallop for short distances. These figures would be roughly comparable to the speed of a coach or wagons. In 1815 traveling by stagecoach from Boston to New York took two and one half days.<sup>1</sup>

Railroad development took land travel to the next level of progress, commonly averaging about fifteen miles per hour, easily traveling long distances at, or greater than, the speed of galloping teams of horses by 1840. By 1832 some locomotives could reach sixty miles per hour, but it was neither practical nor safe to do so and certainly not common practice. By the 1850’s, an average speed of twenty-four miles per hour was not unusual for a passenger train.<sup>2</sup>

Another factor in travel was maps. Early maps may sometimes be found roughly drawn but accurate in content, others artistically drawn but based on vague tales, fantasy, and totally inaccurate data, or for the lucky few, some combination of tradition and valid measured observation. At best they served as “guidelines” for navigating from place to place during the Age of Exploration.

## Travel at Sea in the Age of Sail

At sea, by the eighteenth century there was a reasonably workable navigation process and increasingly reliable maps, but miscalculations based on inaccuracies still plagued the seaman. Imperfect charts, combined with unpredictable weather conditions and lack of reliable clocks resulted in lost vessels. But help was on the way.

In 1802 Edmund Blunt of Newburyport, Massachusetts published the *New American Practical Navigator*, authored by Salem's own world-traveling mariner and mathematician Nathaniel Bowditch, incorporating numerous corrections to John Hamilton Moore's *The New Practical Navigator*, the standard work on navigation at the time. Updates to Bowditch's initial effort remain the current reference source on navigation worldwide. Bowditch's calculations made sea travel safer and more efficient, but during the Age of Sail other factors always affected when one actually arrived at the destination, most obvious being prevailing wind direction, currents, storms, and the condition and sailing qualities of a ship. Ships in good condition without marine growth on the bottom of the hull sailed faster.

There is not a lot of specific information on how fast sailing ships actually went since their progress was dependent on multiple variable factors, although five knots (5.75 miles per hour) seems to have been about average prior to 1830.<sup>3</sup> Ships' logbooks speak to a certain number of "knots" (one knot equals 1.15 land miles) over a measured period of time, but any exact projection of actual arrival time at a destination was impossible. The mark of a well-designed ship was speed within the limitations of its class, but common descriptions referring to fast or slow vessels are inferred in words such as sleek, swift, or lumbering. Speed was appreciated, particularly in wartime when escape or advantage in maneuver meant survival. The same was true for vessels engaged in the slave trade. A fast passage meant greater profits as fewer captives would die enroute. Merchant vessels often sacrificed speed for maximum carrying capacity until revolutionary designs for truly fast ships evolved to perfection during the second quarter of the 19<sup>th</sup> century. The exceptionally long routes that inspired transport by "clipper" were the passage around Cape Horn to the California gold fields, to China for the tea trade, and the run from Britain to Australia.

Some examples of length of voyages indicate the wide range of statistics. One of the earlier documented voyages across the Atlantic Ocean was the September 16 through November 11, 1620 east-to-west passage from Plymouth, England to Cape Cod Bay, Massachusetts by the Pilgrims' *Mayflower*. Since the distance is approximately 3,300 miles, and the time at sea was 57 days for an average speed of just over forty miles per twenty-four day, her speed averaged less than two miles per hour for the voyage.

Unfavorable weather conditions greatly affected this voyage; especially since the intended destination was Virginia. Certainly better performance was expected from the vessel. In April, 1957, the replica of *Mayflower* designed by naval architect William A. Baker sailed at four and one-half knots (5.16 miles per hour) in a ten knot breeze during sea trials, slightly less than one-half of the wind velocity.<sup>4</sup>

An interesting account of a west-to-east trans-Atlantic voyage was noted in the journal of a Hessian soldier on his way back to Europe at the end of the American Revolution. It took twenty-six days to sail from New York to Deal, England.<sup>5</sup> The distance is nearly the same as

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that from Plymouth, England to Cape Cod, but a relatively uneventful trip with favorable winds and current averaged about one hundred thirty miles in a twenty-four hour period, or about five and one-half miles per hour. Expectations were not much different from *Mayflower* in a favorable wind one hundred sixty-three years earlier.

Following the Revolution, American entrepreneurs took up the challenge of expanding trade to the Far East via Cape Town to Isle de France, India, China, Batavia and Sumatra.

They knew a lot about what to expect from the experiences of the European East India companies, but they had much to learn about the particulars of doing business.

In 1788, Salem's Captain Jonathan Carnes and his business partners at the Boston firm of Freeman & Vans established contacts in Sumatra that were previously unfamiliar to Americans. Carnes was "charting new waters," leading eventually to Salem's world-wide prominence as a pepper port. Beginning in 1795 with the eighteen month long voyage of Peele and Beckford's schooner *Rajah* of Salem, Carnes put locations on the charts that had long been clouded in mystery. They literally didn't know exactly where they wanted to be when they got there, but took great effort to find the prime locations. A seven hundred percent profit return on the cargo speaks to their success. Extended voyages to the East Indies were not uncommon; trading was often conducted on a value added basis, making the circuit from port to port seeking opportunities for trading up as they went along to return maximum profit upon arriving home. This practice made predicting arrival times almost impossible, however, the entrepot at Isle de France served as a clearing house for the transmittal of communications between the shipmasters and the owners regarding expectations and progress.

Whaling ships were often at sea for three or four years with no specific destination, just trusting to luck that whales would be where they were usually found at a particular time of year, frequently in the Pacific or Arctic waters.

### **Technological Advances**

Toward the end of the eighteenth century technology was beginning to give travel a chance to proceed at a faster and, in some cases, safer pace. Improved clocks, or "chronometers," as they were known, finally made accurate determination of longitude feasible, and steam driven machinery became a reality that soon had great implications for speed and predictability of travel on land, sea, and of vital importance to the westward expansion of the new nation, rivers. Steamboats provided a practical means to go against the flow, expediting the transportation of large quantities of goods from the hinterland to seaports, augmenting the network of canals that operated at the pace of a slowly walking mule. Overall, water transportation of goods was cheaper than any other method available.

In 1819, the ship *Savannah* made the first trans-Atlantic passage using, at least partially, steam propulsion. Her time from Savannah, Georgia to Liverpool was twenty five days in spite of unfavorable weather conditions, a faster run than that expected of a traditional sailing vessel even though her progress was checked by premature expenditure of fuel. Nonetheless, the door to shipping on a reliably predictable schedule had been pried open. A trend toward building larger sailing ships of improved design that competed against each other in the trans-Atlantic packet (scheduled) trade followed the War of 1812. Technological advances

and the need to make fast, long distance runs culminated in the evolution of the clipper ship. In turn, steamers supplanted the traditional vessels when dependable engines became commonplace and ports became coaling stations. Steam-driven vessels transitioned from auxiliary engines in sailing ships to primary steam propulsion with masts and sails as backup, a characteristic that survived late into the nineteenth century. By 1860 Atlantic crossings by steamship were considered slow if they required more than thirteen or fourteen days. Record voyages were made in ten days or less.<sup>6</sup>

Some references to times in transit or speed from various sources include:

Flatboats, from Pittsburgh to New Orleans (downstream via the Ohio and Mississippi Rivers): four to six weeks.<sup>7</sup> Flatboats were taken apart and sold as lumber upon reaching their destination.

Keelboats and barges to Pittsburgh from New Orleans (upstream): four months or more.<sup>8</sup>

Ohio and Mississippi steam packets: averaged 15 miles per hour.<sup>9</sup>

Fast Hudson River steamboats: 20 miles per hour.<sup>10</sup>

### **The Speed of the *Friendship***

The original ship *Friendship* of Salem (1797) performed well under sail. Sailing ships of her day averaged around 5 knots. She regularly made 10 knots, and had a top speed 12 knots (11.5 and 13.8 miles per hour respectively).<sup>11</sup> Under less than full sail, the replica *Friendship* has clocked eight knots.

The following references give some idea of *Friendship*'s travel times:

Salem to Batavia (Java): 138 days, Batavia to Salem: 117 days (1797-1798).

Hamburg, Germany to Salem: 44 days (1799).

Salem to Cadiz, Spain: 19 days (1800).

Salem to Madras, India: 111 days, Madras to Salem: 110 days (1806).

Salem to Archangel, Russia: 50 days, Archangel to Salem: 53 days (1811).

The 750-ton Continental frigate *Hancock* (1776) was capable of 13 knots (14.95 miles per hour).<sup>12</sup> The much larger 1797 United States frigate *Constitution* (1,576 tons) could sail at 14 knots (16.1 miles per hour).<sup>13</sup>

Clipper *Romance of the Seas*, built by Donald McKay at East Boston, 1853: San Francisco to Shanghai in 34 days (1856).<sup>14</sup>

In August, 1854 another McKay-built clipper, *Stag-Hound* of Boston, made the passage from New York to San Francisco in 110 days, a distance cited at 16,408 miles, and once traveled from Whampoa, China, to New York in 85 days.<sup>15</sup>

The Atlantic sail packet ship *Siddons*, Nathaniel B. Parker, Master, sailed from Liverpool to New York in 15 days, an unbroken record run (1840).<sup>16</sup> As designs improved ships' speed potentials increased dramatically. In 1815, forty to fifty days was typical on the trans-Atlantic run; by the late eighteen-forties 34 days was about average.<sup>17</sup>

But change was on the horizon.

As the preceding examination of speed during the Age of Sail implies, expectations were markedly lower than they are today for all but foot travel, which has remained a constant benchmark. With the exception of railroad technology, a fast horse was the epitome of speed until the development of the gasoline engine at the end of the nineteenth century. The frantic pursuit of speed by the automotive industry in the early twentieth century quickly put a new perspective on the definition of rapid. Followed by like developments in aviation and rocket technology, expectations for arriving in a hurry had at last brought the fantastic visions Jules Verne (1828-1905) in his prophetic 1866 science fiction novel *From the Earth to the Moon* to reality. He would be pleased to know that, yes, we have arrived there. . .and beyond.

#### Notes

<sup>1</sup> George Rogers Taylor, *The Transportation Revolution, 1815-1860* (New York, 1851), p. 143.

<sup>2</sup> John H. White, Jr., *A History of the American Locomotive, Its Development: 1830-1880* (New York, 1979), p. 73.

<sup>3</sup> Taylor, p. 146.

<sup>4</sup> William A. Baker, *The New Mayflower: Her Design and Construction* (Barre, Massachusetts, 1958), p.140.

<sup>5</sup> Johann Conrad Dohla, *A Hessian Diary of the American Revolution* (Norman, OK, 1993), pp. 233-239.

<sup>6</sup> Taylor, p. 146.

<sup>7</sup> Taylor, p. 57.

<sup>8</sup> *Ibid.*

<sup>9</sup> Taylor, p. 142.

<sup>10</sup> *Ibid.*

<sup>11</sup> *Ship Friendship*, various log entries.

<sup>12</sup> Howard I. Chapelle, *The Search for Speed Under Sail 1700-1855* (New York, 1967), p. 140.

<sup>13</sup> Henry E. Gruppe and the Editors of Time-Life Books, *The Frigates* (Alexandria, VA, 1979), p. 85.

<sup>14</sup> Chapelle, p. 374.

<sup>15</sup> *The U.S. Nautical Magazine*, Vol. II (1855), pp. 401-407

<sup>16</sup> Melvin Maddocks and the Editors of Time-Life Books, *The Atlantic Crossing* (Alexandria, VA, 1981), p. 97.

<sup>17</sup> Taylor, p. 145.

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