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## Nantucket Jetties

By Matt Byrne

Long, dark arms of stone, the jetties of Nantucket reach out to the sea, offering safety and a welcome to island visitors. For over a century, the jetties, huge slabs of New England granite, have guarded the channel into Nantucket Harbor. And neither time nor abrasive tide nor the crunch of ice has diminished them.

The need for the jetties arose out of the whaling industry and because of the existence of a sandbar. The sandbar, a massive shoal, stretched across the northwest coast of Nantucket blocking passage into the harbor of any vessel drawing more than nine feet of water. Because of the many sailing vessels that struck upon it and were lost, the shoal acquired a mean reputation. Maritime people called it the "Nantucket Bar"; more often just "the Bar." And it was a place of disaster.

By the early 1800s, vessels sailing out of Nantucket in search of whales began voyaging into the far reaches of the Pacific Ocean. The larger ships needed for such trips drew more than nine feet of water. Now the Nantucket Bar became more than an annoyance, it became a threat to the future of the whaling industry on Nantucket. To solve the problem of shoal water, the island's sea captains designed a method of loading and unloading the whaling vessels. An outward-bound vessel, empty and riding high in the water, would be taken from its dock, moved out of the harbor across the Bar into deeper water. Then, using a number of smaller boats called "lighters," the islanders would shuttle back and forth between wharf and sailing vessel, ferrying out the supplies and provisions needed for the long voyage to the Pacific. When the ship returned, now heavy with barrels of whale oil, the process had to be reversed. Lighters ferried the cargo to dockside, and once the sailing vessel lay empty and riding high in the water, it could be brought across the Bar to the docks. Loss of time and the extra manpower needed for the lighters made this practice expensive. And the risk of a sudden storm always threatened a returning vessel waiting with cargo just outside the Bar.

To overcome the hazards of the Bar, the citizens of Nantucket in Town Meeting in 1803 petitioned the Congress of the United States. Their request: dredge a channel through the barrier of the Nantucket Bar. Mariners, whalers, and nautical engineers were unable to agree upon the best method of conquering the Bar. Many thought dredging would do it. Others suggested the construction of long, stone piers — one on each side of the harbor entrance. In theory, the rush of the strong Nantucket tides between the stone piers would furrow a channel to a usable depth.

Over the next decades, federal engineers visited the island conducting surveys, holding meetings, discussing the matter and writing their reports. And the islanders waited.

In 1828, impatient island ship owners put up a sum of money to clear a channel through the Bar at their own expense. They bought a dredge, towed it over from the mainland, and put it to work. Tough, impenetrable, the Bar resisted the dredge. And with their funds exhausted, the men abandoned the effort.

Nevertheless, the island whaling fleet continued to grow, and by the early decades of the nineteenth century Nantucket had become the whaling center of the world. Lighters continued in use, and sailing vessels continued to wreck themselves upon the treacherous shoals of the Nantucket Bar. To remain competitive in the rush for whale oil, the islanders tried other methods to conquer that barrier of hard-packed sand and stone and clay that lay across their harbor entrance. They tried using a floating drydock.

Called "camels," floating drydocks had been used for years in several European countries. Two hollow, wooden hulls formed the sides of the flat-bottomed camel. With the hulls filled with water and the camels thus settled deep below the surface, the whaling vessel was slipped between the hulls and securely fastened. Then, by pumping out the hulls, the camel and the sailing vessel that was nestled inside floated high in the water to be easily towed across the Bar.

By the year 1845, use of the lighter method had declined to be replaced by the safer and less expensive camels. The islanders had conquered the Nantucket Bar without the aid of Congress. Or so they thought.

The glory days of the Nantucket whaling fleet were over. In 1846, a fire destroyed the wharves and most of the business area of Nantucket. Oil discovered in Pennsylvania crowded out the need for sperm oil. Hundreds of islanders went west for California gold. And then came the Civil War.

When the war was over, transportation along the East Coast increased, and Nantucket Sound with its sandbars, shoals, and tidal rips became a main artery of commerce. As always, in bad weather, passage through Nantucket Sound became a dangerous ordeal for most vessels under sail. Mariners needed a safe harbor: Nantucket, the politicians declared, could be made that.

Again, federal engineers studied the harbor and the Bar. They advised Congress that a riprap jetty of stone should be built at the harbor entrance; possibly a second. The jetties would be designed to concentrate the powerful tides; the forces of nature would be turned against the obstinate bar. So, in 1880, some eighty years after the islanders first sought help from Congress, Congress acted. Federal funds were granted to construct the western jetty.

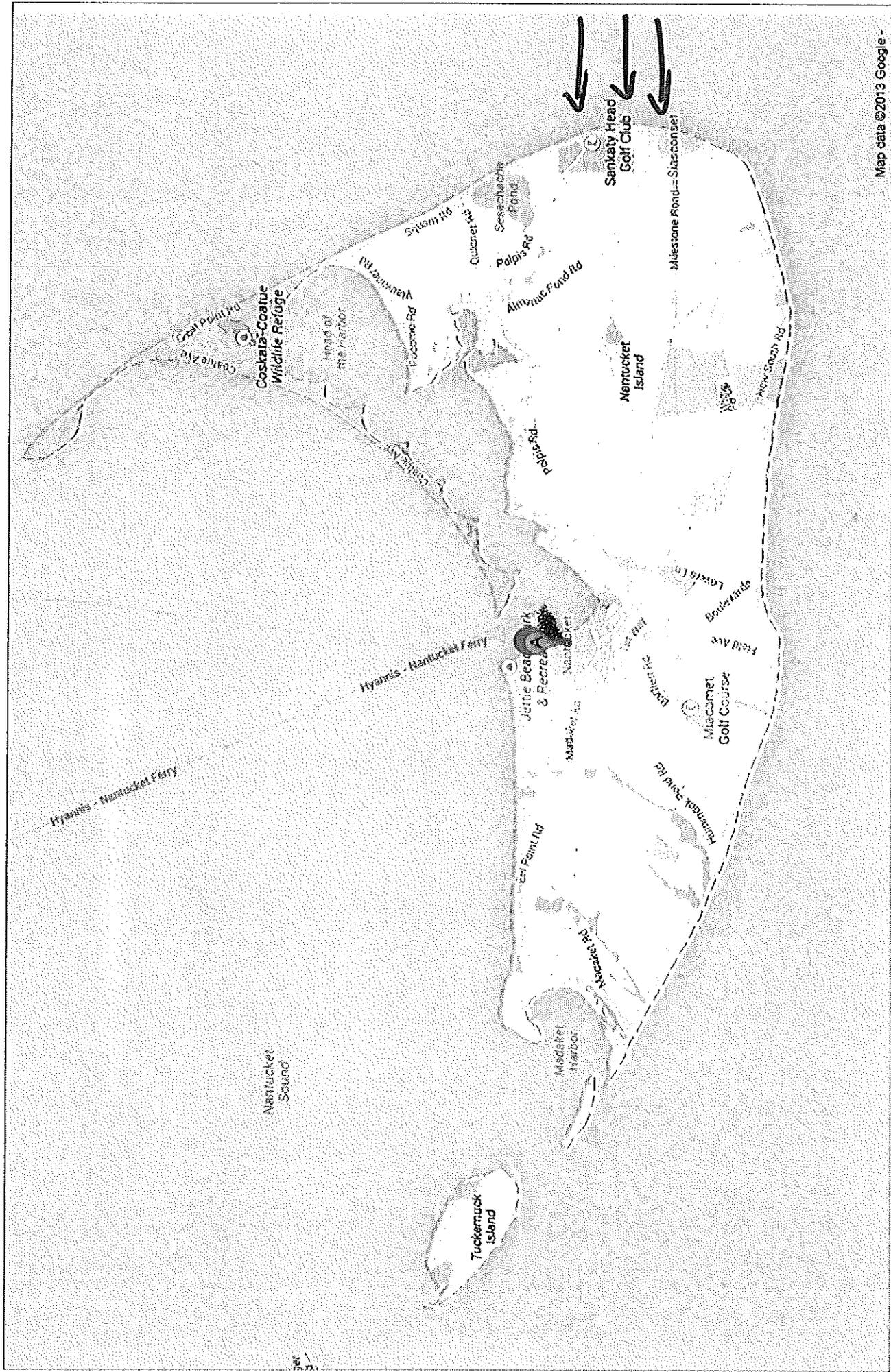
Private contractors in the spring of 1881 shipped the granite stone, the riprap, over from Connecticut. By 1884 they had completed the western jetty, extending it some 4,000 feet from land out into deep water. With that done, the need for a parallel jetty became obvious. Yet no one was in a hurry to complete it. Ten years passed. In the spring of 1894, the politicians finally approved work to start an eastern jetty.

Historian Edouard A. Stackpole, in writing the history of the Nantucket Bar, estimates that the U.S. government spent in excess of \$500,000 to construct the granite jetties. They have proven remarkably sturdy--free of the need for repairs. In addition to providing a safe, useful harbor, they have protected the land, and have held back the forces of sea storms and the crush of ice.

The Bar remains. Today, passenger boats coming from Cape Cod are eased across the Bar. Sea captains know it awaits below, forever a peril.

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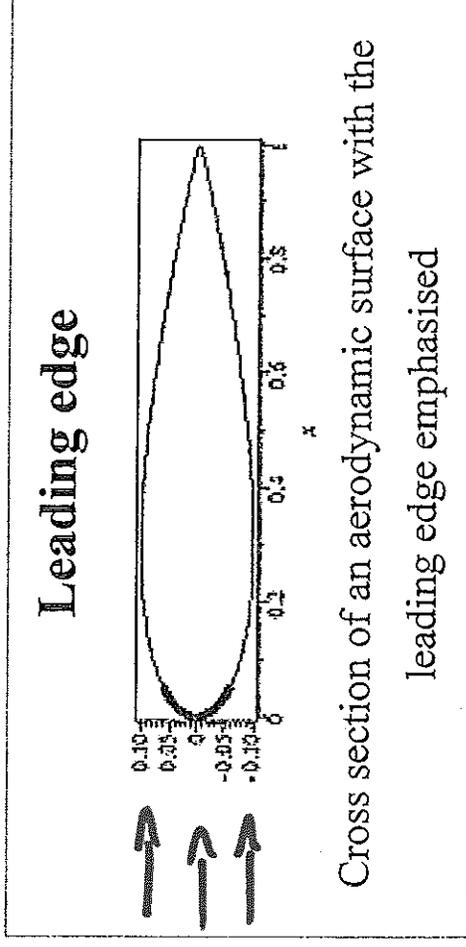
Matt Byrne is a retired lawyer living with his wife, Vera, in the town of Manlius in upstate New York. For thirty years they have been summer residents of the Madaket area.



# Leading edge

From Wikipedia, the free encyclopedia  
(Redirected from Leading edge (of wing))

The **leading edge** is the part of the wing that first contacts the air.<sup>[1]</sup> Alternatively it is the foremost edge of an airfoil section.<sup>[2]</sup> The first is an aerodynamic definition, the second a structural one. As an example of the distinction, during a tailslide, from an aerodynamic point-of-view, the trailing edge becomes the leading edge and vice-versa but from a structural point of view the leading edge remains unchanged.



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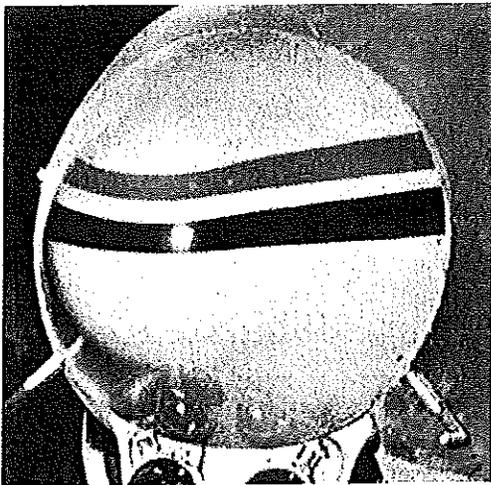
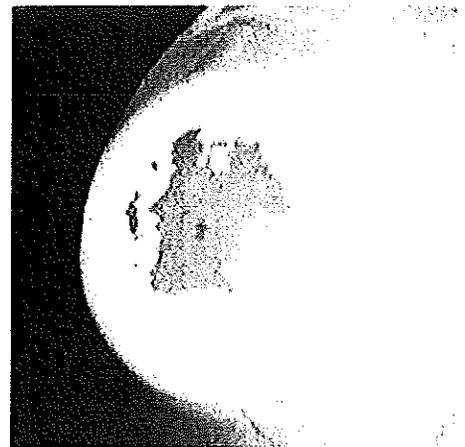
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