

BY THE OLD HYDROGRAPHER

'As it Was'

Matthew Fontaine Maury is probably the best known of all hydrographers, and the most celebrated both in his homeland, the United States of America, and in Europe.

He served for 18 years as Superintendent of the Depot of Charts and Instruments in Washington during which time he made his name with the publication of his *Wind and Weather Charts and Sailing Directions*, his bathymetric chart of the North Atlantic and his book *“The Physical Geography of the Sea”*.

Two Huguenot families, who had fled from France after the Revocation of the Edict of Nantes in 1685, had come together in Dublin early in the 18th C where Matthew Maury married a member of the Fontaine family. The young couple emigrated to Virginia in 1716.

Their great grandson Matthew Fontaine Maury joined the U.S. Navy as a midshipman in 1835 to enjoy an active life which included a world circling voyage onboard *Vincennes*. He found the Navy to be old fashioned in outlook and during his next voyage around Cape Horn as sailing master in *Falmouth* he realised that mariners could be better served if provided with sailing directions and aids for weather forecasting.

Here I digress to include an account by midshipman William Whiting who accompanied Maury when he left Falmouth in a boat one day to fix features on the south west coast of South America, for it shows that Maury was already imbued with that determination which motivated so many of the old hydrographers:

"He landed on the Labos Rocks to the westward of San Lorenzo to make some astronomical and trigonometrical observations while I remained in the boat. When he landed it was almost a dead calm, and the sea comparatively smooth: but by the time he had finished his observations a fresh wind had sprung up from the southwards, the tide had risen, and the sea was raging so as to forbid the near approach of the boat, one minute receding from the rock so as to leave a yawning gulf of twenty or thirty feet depth, then rushing up again with an irresistible force.

Calling on me to approach as near as I dared, Maury ascended to the highest point of the rock, took off his jacket, and with a string which he found in his pocket tied in it his watch and sextant, and then threw it with all his might into the sea toward the boat, while the bowman of the boat stood ready to seize it with his boathook before the water had time to penetrate the wrapping. Maury then, watching the culmination of a wave, sprang from the rock himself and, being a good swimmer and possessed of much youthful strength, reached the boat in safety, but it was a fearful leap".

As a lieutenant in 1836 Maury declined an appointment to sail with Lieutenant Wilkes on the U.S. Surveying and Exploring Expedition. He was then employed surveying harbours in North Carolina and in Louisiana during which time he was seriously injured when a overloaded stagecoach in which he was travelling overturned.

On final recovery he was unfit for further sea service, but was successful in 1842 with his application for the post of Superintendent of the Navy's Depot of Charts and Instruments in Washington, which two years later embraced the work of a hydrographic office. At the Depot were to be found the log books of every U.S. Naval vessel that had sailed the seas. Maury fell upon this wealth of data to begin the study of the prevailing winds and currents across the oceans.

Alexander Dallas Bache, a great grandson of Benjamin Franklin who had first brought the mariners's attention to the importance of the Gulf Stream, was a graduate of the Military Academy at West Point and currently serving as a Professor of Sciences at Pennsylvania University when in 1843 he was appointed Superintendent of the Coast Survey in succession to Ferdinand Hassler. The Director of the Smithsonian Institution was another scientist, Joseph Henry, who was busy organising a network of land-based weather reporting stations.

So here were two scientists and a naval officer each engaged in major environmental projects. They did not see eye to eye, Bache saw Maury's interest in the Gulf Stream as an invasion of his territory, whilst Henry viewed Maury's plans for weather reporting at sea as conflicting with his work.

Nevertheless Maury pursued his hydrographic and meteorological programmes vigorously. His extensive analysis of the ships's logs enabled him to publish his *Wind and Current Charts*, and his *“Explanations and Sailing Directions”* to accompany the charts, which were soon in great demand by the more discerning shipmasters, many of whom claimed to have reduced the duration of their voyages by their use; and certainly the publications brought Maury's name to the attention of shipping circles. He was awarded an LL.D by Columbian College (now George Washington University), whilst New York merchants and underwriters gave him a tea set and 5000 dollars. Such were the first of many honours to be bestowed upon him over the years, many by European countries.

A Naval Observatory which had been building for two years opened in October 1844 with Maury as the Superintendent, transferring there with him his charting and hydrographic work.

He had been agitating for some years both in the U.S. and in Europe for a Conference to be arranged to establish international co-operation in the taking of meteorological observations at sea. Eventually, with the authority of the Naval Secretary, Maury sent out invitations for such a Conference to be arranged in Brussels in August 1853.

Ten nations sent delegates, including Maury who was largely instrumental in the acceptance of a scheme for the standardisation of meteorological logs to be maintained onboard all seagoing vessels. Six more nations joined the scheme the following year so that about 90 per cent of the world's shipping became involved.

From about 1850 onwards thoughts on both sides of the North Atlantic were turning towards the possibility of spanning the ocean with a seabed telegraphic cable; Maury was determined to play a part in the deep-sea sounding programme that would be required to determine the most suitable route. For the work he was able to obtain the use of a ship named Dolphin, with a dedicated surveyor, Lieutenant Berryman onboard. With a number of ropes and lines he was able to obtain deep sea soundings, whilst a cunning device invented by Midshipman Brooke enabled him to recover samples of the ocean floor.

Maury was able to collect enough deep-sea sounding data to prepare and publish a contoured chart of the North Atlantic which appeared in the first edition of his book "The Physical Geography of the Sea" published in 1855. The book and the chart ran to several editions, the final one appearing just prior to the outbreak of the Civil War in 1861.

The book, although it sold extremely well and provided much useful information concerning the oceans, received criticism from contemporary scientists for the explanations he gave for the flow of ocean currents. His idea was that the varying salinity of different bodies of water, rising or falling according to their density, stimulate such currents, rather than the prevailing winds and the rotation of the Earth, a force which the American Scientist William Ferrel had expounded in 1851. However, Maury took no steps to amend his book in subsequent editions to meet these censorious comments.

During 1860, whilst Maury laboured at the Observatory war clouds were gathering until in April 1861 the State of Virginia, his beloved homeland, seceded from the Union and called home its citizens to enter service in its defence.

On Saturday the 20th Maury cleared his desk, wrote a letter of resignation to the President, laid down his sword, changed out of uniform and handed over his responsibility for the Observatory to Lieutenant Whiting, his assistant, who had witnessed his leap from Labos Rock nearly thirty years earlier.

He walked to the railway station and took a train to Richmond which was to become the capital of the Confederacy. His particular form of defence was his invention and laying of electrically controlled mines in the James River which prevented Federal war vessels from reaching the city throughout the War.

At the War's end Confederates were debarred from returning north, so Maury took his wife and family, less his son John who had been killed in the War, to England where they were welcomed and remained for two years. Maury was honoured with an LL.D at Cambridge University and a very special gala dinner arranged by the First Lord of the Admiralty.

In 1868 they sailed in the liner France for New York unknowing whether they would be admitted. However only a few days before their arrival President Johnson had issued a proclamation granting a pardon to all former Confederates. But there was no going back to the Navy or his post at the Observatory. He returned to Virginia and for the final five years of his life threw himself into the compiling of a Physical Survey of Virginia required to plan the rehabilitation of the State which was so desperately required.

With Maury absent from Washington during the War Bache, Henry and fellow scientists established a "National Academy of Sciences". At a meeting in 1864 it was resolved that "The Volumes entitled Sailing Directions heretofore issued to navigators from the Naval Observatory and the Wind and Current Charts which are designed to illustrate and explain, embrace much which is unsound in philosophy and little that is practically useful, and that therefore, these publications ought no longer to be issued in their present form".

In 1866 Congress passed an "Act to Establish a Hydrographic Office within the Navy Department" where Maury's monthly Wind and Current Charts were republished remaining to this day one of the most popular products of the U.S. Hydrographic Office whilst providing a lasting memorial to a great Hydrographer.

Further Reading

Williams, Francis Leigh, "Matthew Fontaine Maury - Scientist of the Sea". Rutgers University Press, New Brunswick (1963).