

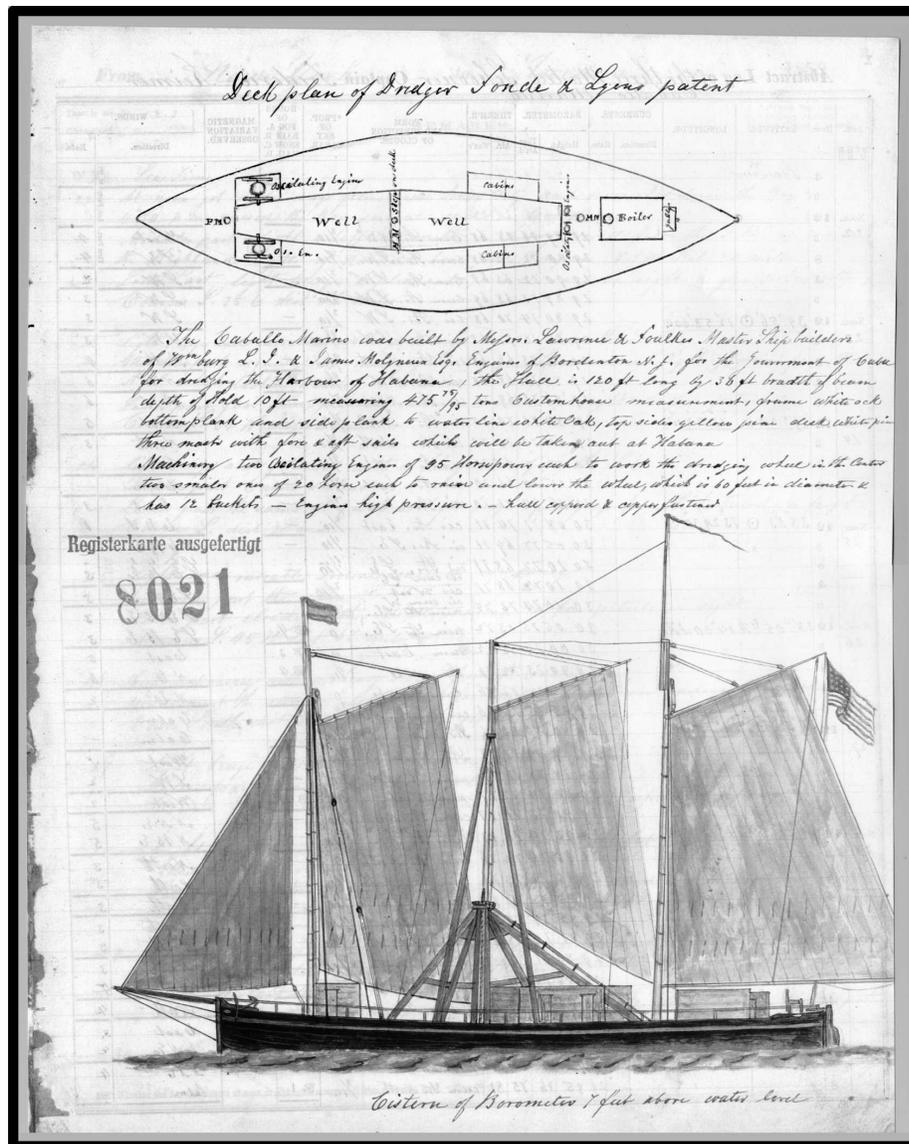
Scientific vision, a passion for observation, and the impetus for change

Germany loans Maury logs to the National Climatic Data Center

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"... every fresh fact that is revealed.....is a clue leading from the very chambers of knowledge, which the discoverer leaves behind him to guide his followers. It is never lost.....for we may at pleasure take up the thread and commence where he ended..."

Matthew Fontaine Maury, University of Virginia, June, 1855



▲ **Figure 1.** Deck plan and description of the "Caballo Marino," an American-built dredger bought by the Cuban government; from the 1859 abstract log of her positioning voyage to Havana Harbor.

Science may be the matter-of-fact analysis of data from carefully made and recorded observations, but the data also hold evidence of the passion and drive that sustain large efforts. The evidence is found in the words and images left behind by those attempting to describe the rules by which the universe operates. The nineteenth century saw such an explorer, one with a vision of an international uniform system for oceanographic and meteorological observation. His vision drew countless others into the work — a global fleet of volunteer observers whose initiative and enthusiasm show in the details of records kept beyond the requested minimum (Figures 1 and 2).

Matthew Fontaine Maury, considered the world's first great oceanographer, was the first to solve the problem of making deep-sea soundings and the first to describe the winds, currents, and climate of the sea. As early as 1851, he actively advocated an international system of land-based weather observers

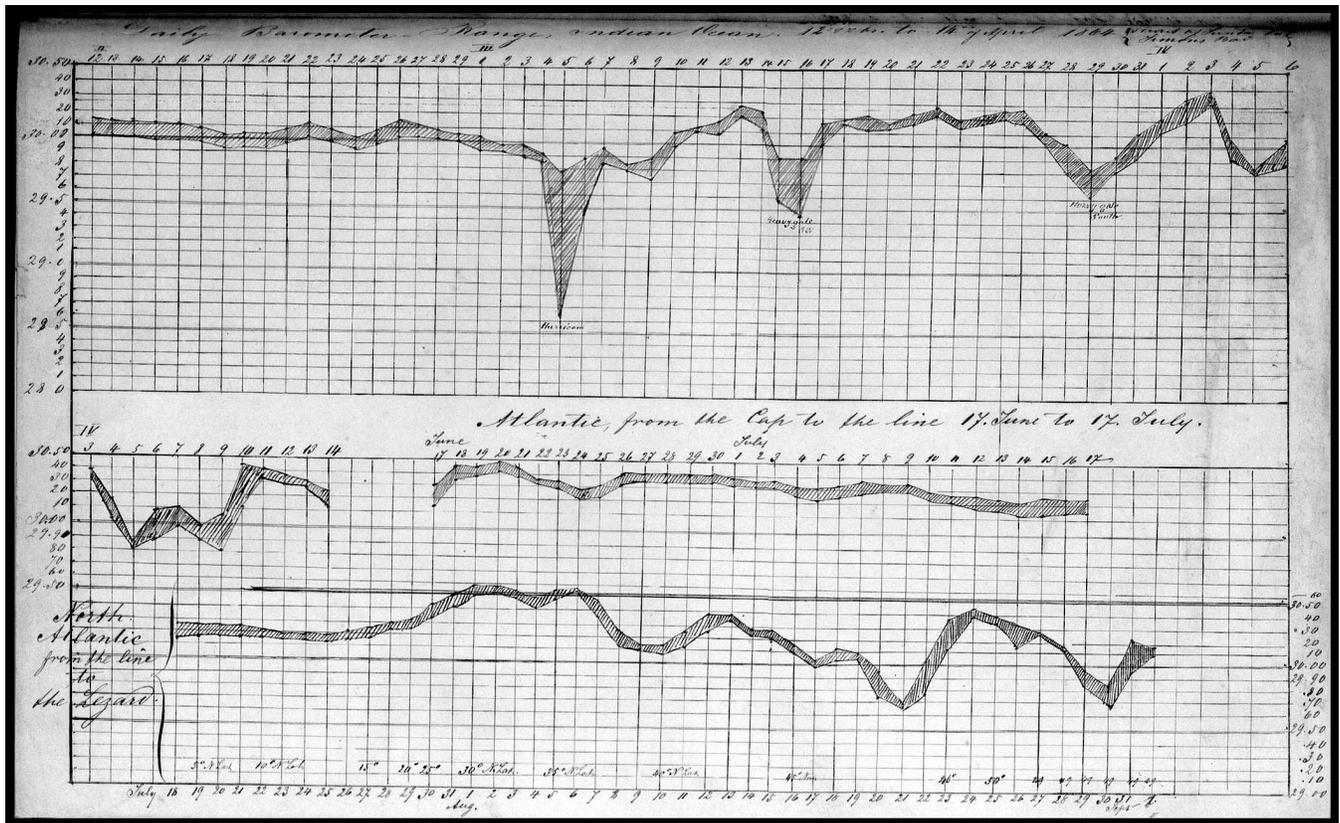
and lobbied for a telegraph-connected observing network in the U.S. He gave the Transatlantic Cable its stable position on the sea bed and transatlantic steamships the safety of east- and west-bound shipping lanes. It all happened because an accident left Lieutenant Maury, USN, with a broken leg and temporarily unfit for sea duty.

In 1842, the convalescent Maury was assigned to the post of Officer-in-Charge of the Depot of Charts and Instruments (later the U. S. Naval Observatory), where he found a number of old ship's logs. He had experienced the dangers of sea voyages and had traveled in areas where it was hard to find information on winds, currents, and storm frequencies. Maury had his staff survey the data stored at the Depot and published the results in the first chart for the North Atlantic in 1847. Wishing to publish additional charts and sailing directions, he set about persuading ship's commanders to continue providing data.

Science routinely serves public safety, commerce, and the military. Ships, their crews, and cargoes were commonly lost to an unpredictable sea in Maury's time, and the captain who could be the first to bring a cargo to port or a ship to battle was a priceless asset to the global fleet. When Maury supplied free wind and current charts to ship's captains, he requested that, in return for future free charts, the attached pre-formatted logs (Figure 3) be used to record additional observations. These logs were known as Abstract Logs and were kept explicitly for recording wind, current, and weather data from the world's oceans. The captains, having put Maury's charts and directions to the test, enthusiastically returned completed Abstract Logs to the U.S. Naval Observatory.

With the human, military, and commercial benefits providing an impetus for change and with the backing of the Secretary of the Navy, an inter-

— continued on page 6



▲ Figure 2. Three graphs of daily barometer range, February through August, 1864, Indian and Atlantic oceans. Included is a March 5, 1864 typhoon in the Indian Ocean, not part of a log but likely from a Prussian ship.

▲ Figure 3. Abstract log of the bark "J. Godfrey", 1860, New York to Shield, England, with "Strom verwertet" stamp in the Currents column and researchers' marks in the Hour column.

Maury logs, from page 5

national conference on the new science of physical geography of the sea was convened in Brussels in August of 1853. Maury was not only one of the primary organizers but also the opening speaker and a valued participant in many of the Conference sessions. The Conference was attended by the major maritime nations, including Belgium, Britain, France, Holland, Norway, Sweden, Portugal, Russia, and the United States, some of whom had translated and published versions of Maury's Sailing Directions.

While the Brussels Conference resulted in an even greater volume of logs submitted to Maury for analysis, perhaps the most important outcome of the Conference was the establishment of a uniform system of meteorological observations at sea. Early log formats and observ-

ing practices had been left to individual captains or countries, but post-Brussels logs are similar in format and have remarkably standardized instructions for making and recording observations

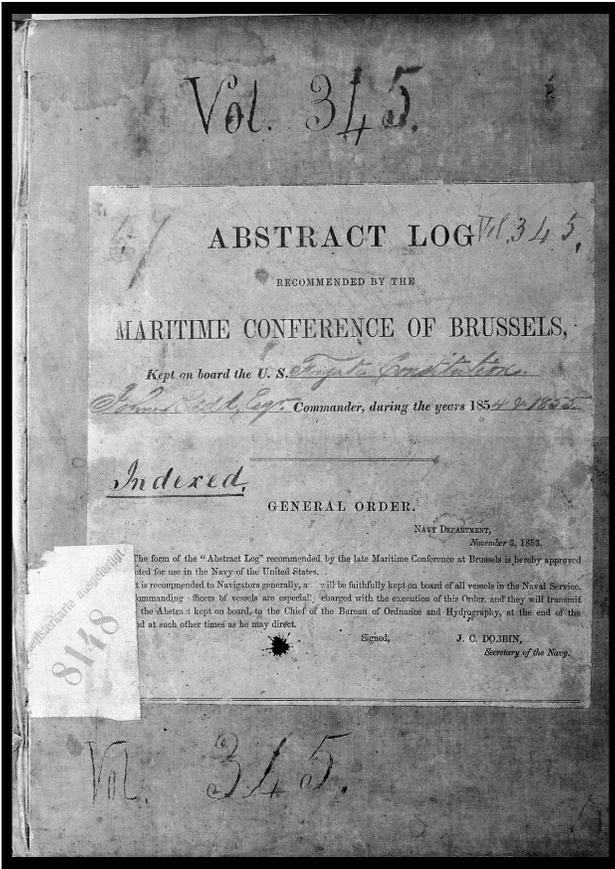
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▲ Figure 4. Abstract log of the Portuguese corvette, "Dom Joao", 1855, for a voyage from Macao to Lisbon. Instructions to the observer reflect the 1853 Brussels Conference agreement.

(Figures 3 and 4). This standardization improved the accuracy of charts and sailing directions at the time, and is a critical element in the usefulness of the data today.

It is not clear how a collection of U.S. Maury logs ended up in Germany (Figure 5). The circumstances might be related to the Civil War's disruption of the international effort to describe the oceans' climate. The German Weather Service believes it has had the collection since the mid-1800s. The collection includes logs from 1845 through 1867, with 591 out of 806 voyages beginning in the years 1856-1860. At the time, there was international concern when Maury, the primary analyst and lead scientist for mapping the oceans' climate and currents, announced he would be resigning his U.S. Naval commission and returning to Virginia upon the outbreak of hostilities. The work was important enough to the global community that France and Russia offered him positions to ensure its continuance, both of whom Maury refused.

The collection was offered on loan to NCDC by the German Weather Service at last year's Volunteer Observing



▲ Figure 5. Abstract log of the US Frigate Constitution, 1854-1855. Naval Observatory volume #345; Deutscher Wetterdienst Registration # 8148.

Ship Climate meeting held in Southampton, England, in an effort to preserve the scientific data recorded in the deteriorating journals. There are comparatively few existing digitized data for the period covered in these logs (1845-1867). The U.S. holdings of Maury Logs are found in National Archive's Maury Collection. Those data have already been digitized, in cooperation with China's National Marine Data and Information Service of the State Oceanic Administration, for inclusion in the Comprehensive Ocean-Atmosphere Data Set (COADS) release due out later this year.

NCDC plans to inventory the German collection and create scanned images of the logbooks. It is hoped that sufficient resources will eventually be located to digitize the records for inclusion into COADS.

Today, international recognition takes forms similar to those offered to Maury in his lifetime: medals, ac-

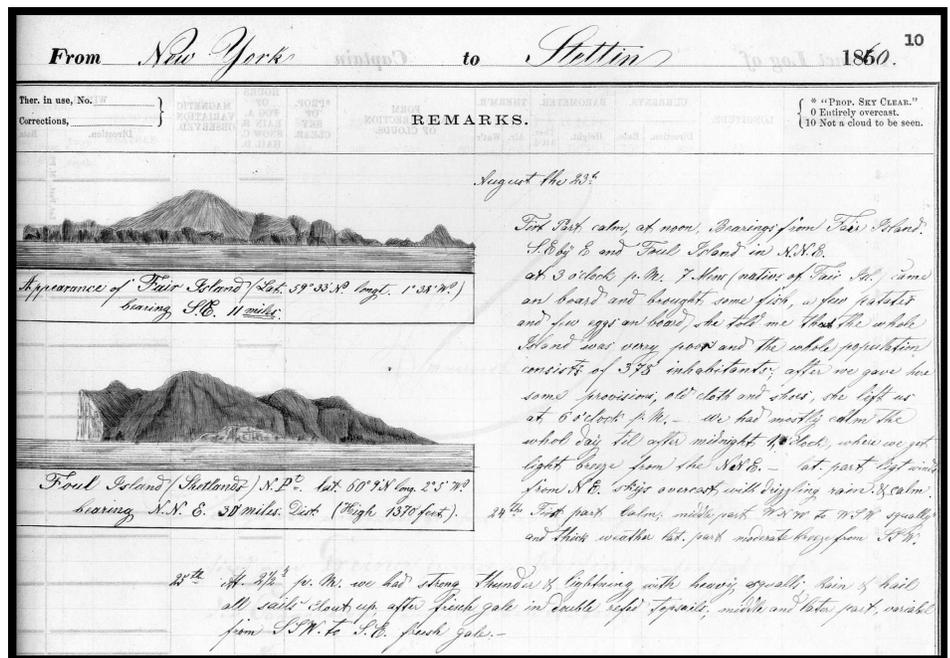
knowledge in books and articles, and a name preserved on buildings and collections. But evidence of the usefulness of the work may also be found in the grateful acknowledgment of those who benefit from the application of the science — a ship's captain whose life had been made easier or perhaps longer through the efforts of the scientist whose vision awakened the latent scientist in a generation of ocean-going observers (Figure 6):

"Lieu't Maury

Respected Sir your Nautical Monographs No. 1 wich you have kindly sent has been thankfully received.

Also an acknowledgement of my Log - I am glad that it is of some use to you - and I am now Constrained to acknowlege at this (late hour) the good effects the study of your works has had on me from time to time - Morally & Spiritually I have read with wonder & look up to him who holds the winds in his fists & the sea in the hollow of his hand."

Letter from Andrew Mearns, Captain of the British ship "Peerless", November 1860. ■



▲ Figure 6. Sketches of the navigational landmarks Fair and Foul Islands in the Shetlands from the abstract log of the Prussian brig "Elise."