

**Guide to the John Ericsson Letter on Caloric Engines, 1858  
January 25  
MS0464**

**The Mariners' Museum Library  
At  
Christopher Newport University**

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Processed by Bill Edwards-Bodmer, April 2010

## DESCRIPTIVE SUMMARY

**Repository:** The Mariners' Museum Library  
**Title:** John Ericsson Letter on Caloric Engines  
**Inclusive Dates:** 1858 January 25  
**Catalog number:** MS0464  
**Physical Characteristics:** 1 letter (correspondence)  
**Language:** English  
**Creator:** Ericsson, John, 1803-1889

## BIOGRAPHICAL SKETCH

John Ericsson was born in the province of Vermland, Sweden, on July 31, 1803. The son of a mining engineer, Ericsson showed an early interest in mechanics. By the age of ten, he had designed and constructed a miniature sawmill and by 13, he was a cadet in the Swedish navy. By the age of 17, he entered the Swedish army, joining as an ensign in the 23rd. Corps, a specialized engineering unit for the army. While serving in the army, Ericsson became interested in steam engines and developed the theory for his caloric engine, which operated on the principle that air heated to very high temperature could be used to drive engines.

In 1826 Ericsson published a paper on his work to develop a caloric engine. That year he demonstrated his invention to the British Society of Civil Engineers. Although the engine failed in the demonstration, Ericsson impressed the English engineer John Braithwaite. Braithwaite was impressed with the young Swede's determination and offered him a position as a partner in his firm. In the ten years that Braithwaite and Ericsson worked together they developed some 30 new inventions, including an evaporator, a depth finder, a series of improved engines, and a steam engine with a surface condenser.

By 1836, Ericsson had patented a design for the screw propeller. An American naval officer, Robert Stockton, was impressed with Ericsson's propeller and persuaded him to immigrate to the United States. In 1839, with Stockton's influence, Ericsson was awarded a contract to build a screw-propelled warship for the United States Navy. Launched in 1843, the USS *Princeton* was the first warship in naval history to be designed and built as a screw-powered ship. During the ship's trials in 1844, one of the guns exploded killing several dignitaries on board. Efforts by the Navy to assign the blame to Ericsson, led the engineer to redirect his creativity into civilian fields.

By June 1862, Confederate forces started the conversion of the USS *Merrimack* into the CSS *Virginia*. Secretary of the Navy, Gideon Welles, countered with the creation of a board to build an ironclad vessel. After presentations and negotiations, Ericsson's design of the USS *Monitor* was accepted. *Monitor's* successful battle with the Confederate ironclad *Virginia* on March 9, 1862, made Ericsson a hero in the North. Throughout the rest of the Civil War, Ericsson was involved in the design and construction of a number of ironclad monitor type vessels of the United States Navy.

After the Civil War, Ericsson continued his work on maritime and naval technology. He designed ships for foreign navies, experimented with submarines and self-propelled torpedoes, and worked on technologies as exotic as solar energy. Ericsson continued to work on his invention until his death in New York City on March 8, 1889. In August 1890, following a memorial service at New York, his body was placed on board the cruiser *Baltimore*, which carried him across the Atlantic to his native Sweden for burial.

John B. Kitching was Ericsson's principle investor for his caloric engines. Kitching, a man of wealth and enterprise, previously supported Samuel Morse and helped finance the first transatlantic cable.

Ericsson became intrigued with the idea of the caloric engine at a young age. Caloric engines operate on the basic principle of power by hot air, with no need for steam. As the air is warmed, it expands and thus drives the engine by moving the piston, fly wheel, shaft, etc. Ericsson began designing caloric engines in the 1820s and continued modifying designs until his death in 1889. While his larger caloric engines installed on ocean-going vessels failed in application, his smaller engines met a moderate amount of success.

### **SCOPE AND CONTENT**

This collection consists of a hand-written letter by John Ericsson to John B. Kitching in January 1858. In the letter, Ericsson mentions installing 12-inch caloric engines in a bark owned by a Mr. Wortherspoon. He also advises Kitching against committing to a certain engine, and describes the success of installing a new blower on his 12-inch caloric engine. Written before the Civil War and consequent *Monitor*-fame, this letter illustrates Ericsson's high aptitude for design and mechanics.

This collection is organized into one folder.

### **ADMINISTRATIVE INFORMATION**

#### **Accession Number**

CA73

#### **Accession Date**

1969

#### **Restrictions**

The collection is open to all researchers.

#### **Publication Rights**

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#### **Preferred Citation**

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### **Note to Users**

Due to the fragile and rare nature of the collection, researchers are requested to handle the materials with caution and in accordance with prescribed archival practices. When using these materials, please preserve the original order of the collection.

### **RELATED MATERIALS**

The Library has several other collections of letters by Ericsson either in his hand or in that of his secretary: John Ericsson Letter on Engine Design, 1859, MS0349; John Ericsson Letter, 1864, MS0312; and John Ericsson and Samuel Taylor Letters, 1887, MS0188. In addition to these, one other collection includes manuscript letters written by Ericsson: Isaac Newton Jr. Family Papers, 1829-1932 (MS0013).

### **FILE GUIDE**

#### **Folder 1 Correspondence, 1858**

January 25, 1858

Handwritten letter in ink from Ericsson to John B. Kitching discussing caloric engines.

### **SOURCES CONSULTED**

Thulesius, Olav. *The Man Who Made the Monitor: A Biography of John Ericsson, Naval Engineer*. Jefferson, NC: McFarland & Company, Inc., Publishers, 2007.

### **SUBJECTS**

Caloric engines-Design and construction

Naval architecture

Shipbuilding-Equipment and supplies

Kitching, John B.