



Case Study – Art and Archeology

Preserving History: The Fort Sumter Flag

At a Glance

In the early 1980s, McCrone Associates played a crucial role in the authentication of the Fort Sumter flags as part of a project for the United States Department of the Interior, National Park Service. John Gustav Delly, then Senior Research Microscopist, later, Scientific Advisor to The McCrone Group, was called to the Division of Museum Services, Harpers Ferry Center, to provide analysis to support the authentication of the flags.

Situation

Three flags are associated with Fort Sumter: the garrison and storm flags that flew over Fort Sumter during the battle in 1861, and the Palmetto Guard flag (a homemade flag of Palmetto Guard, a Charleston volunteer unit, first Confederate flag to fly over the fort after its surrender). The Fort Sumter flag is a historic 33-star flag that was lowered by Major Robert Anderson on April 14, 1861 when he surrendered Fort Sumter in the Charleston, South Carolina harbor. Major Anderson brought the flag to New York City for a patriotic rally on April 20, 1861, after which it was taken on tour from city to city throughout the North,

where it was used to raise funds, and act as an inspirational symbol for the North during the Civil War. Four years later, to the day, after the Confederate surrender, then Brevet Major-General Anderson returned to the remains of the Fort to raise the flag in triumph. The garrison and storm flags remained with Anderson until his death in 1905, at which time the Anderson children presented the flags to Secretary of War William Howard Taft. The flags were displayed in the War Department and later at the Pentagon until they were transferred to Fort Sumter in 1954.

Fort Sumter is what is known as a Third System masonry sea fort. It was one of a series of fortifications on the southern

U.S. coast following the War of 1812. Seventy thousand tons of granite were brought from New England to build up a sand bar at the entrance to Charleston Harbor, on which the five-sided brick fort was built. The fort was badly damaged during the Civil War. In 1966, Fort Sumter was placed on the National Register of Historic Places. Initial plans were for the storm flag, representing the Union Defense of Fort Sumter, 1861, and the Palmetto flag, representing the Confederate attack on Fort Sumter, to be displayed in climatically controlled cases. The garrison flag was too large, and too badly damaged from the harsh environmental conditions of a marine island to be displayed.



Fonda Thomsen, Textile Conservator, Division of Museum Services, Harpers Ferry Center, with the 33-star Fort Sumter storm flag.

Issue

The Fort Sumter garrison and storm flags were sent by the National Park Service to Fonda Thomsen, Textile Conservator, Division of Museum Services, Harpers Ferry Center, with the request to authenticate the flags and evaluate their condition prior to being placed on display. Fonda contacted McCrone Associates to perform morphological, chemical, and microscopical particle analysis on the two flags to determine if the analyses support or negate the presupposition that these flags actually flew over Fort Sumter during the battle in 1861.

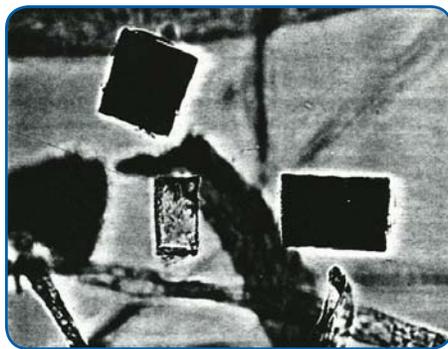
Solution

Together, Fonda Thomsen and John Delly vacuumed both flags using an ordinary canister-type vacuum cleaner fitted at the end with a 37-mm diameter aerosol field monitor collection chamber, thus trapping all particles onto a membrane filter with 0.45 μm pore size. The particle types found during microscopical examination were tabulated and quantified. Special attention was also given to the fibers that make up the flag—their identification as to type, and analyses of the dyes. As an interesting aside, shortly after the War, a young artist who had been hired to do the illustrations for a history of the Fort was given, as partial thanks for his efforts, a small portion of fibers from the flag, which he subsequently had mounted in the front cover of his copy of the history. The National Park Service arranged to purchase the book from the artist's descendants, and these fibers, which were regarded as authentic, were used for comparison to the flag's fibers.

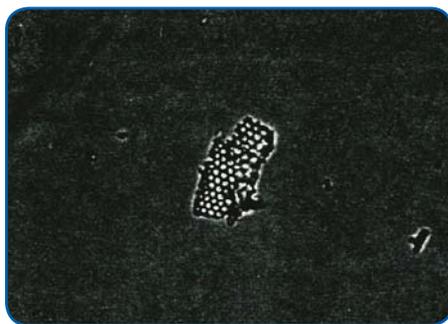
A newly-purchased flag was flown over the Fort in order to establish a baseline comparison of naturally-occurring environmental elements.

Results

Microscopic particles vacuumed from the historic flags were found to be consistent with the particle types in the Charleston Harbor area. In addition to the soil minerals, two particle types of special interest include isotropic particles of sodium chloride, typical of evaporation of salt-water spray, and numerous fragments of marine diatoms.

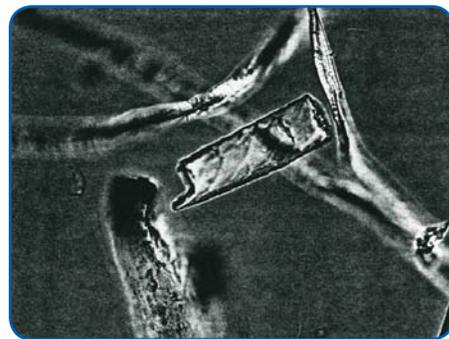


Black-and-white copy of original color photomicrograph of evaporated salt-water spray, 400X.



Black-and-white copy of original color photomicrograph of a marine diatom, 400X.

The fiber types consisted mostly of wool, but cotton and linen were also found. A crucial finding was that the fibers were characterized by "glass rod fracture," indicative of severe photodegradation—findings verified through microchemical tests, as well. Thus, museum personnel were strongly advised to keep the rolling up and unrolling of the flags to an absolute minimum. The severe climatic conditions of an ocean island, together



Black-and-white copy of original color photomicrograph of fibers with glass rod fracture indicating photodegradation, 400X.

with prolonged exposure to ultraviolet radiation from the sun, were responsible for irreversible damage to the integrity of the individual fibers, so that every movement of the flags resulted in countless more broken fibers. These facts, together with the constant whipping in the wind, accounted for the missing portions of the garrison flag; only the storm flag would be placed on display.

Dye comparisons were done not only microchemically, but by attachment to the microscope of a microspectrophotometer. Electron microprobe analysis was used to obtain elemental data for the particle analysis, where required.

All of the microscopical, microchemical, and microspectroscopic evidence we found supports the presupposition that these are the Fort Sumter flags, and that they are in immediate need of conservation measures due to the severe photochemical degradation. A full report of the microscopical analyses of the Fort Sumter flags was submitted to the National Park Service, Division of Museum Services. In addition to these analytical services, we were pleased to offer a course in microscopical particle analysis for the museum staff.