



# The Guidon Streamer 3

A supplement to the Guidon of the Col. George L. Willard Camp 154 SUVCW April 2020



## The before and after effects of using D2 to clean grave stones



The correct use of D/2 for cleaning grave stones can be very dramatic. After use the stones details are very oveous on Capt. Luther M. Wheeler's stone.

### **A Story of a Stone and a Sailor** **David M. Dzewulski** ©2020

Members of the Sons of Union Veterans of the Civil War (SUVCW) often find themselves in old cemeteries for the purpose of rehabilitating, remounting or cleaning headstones of veterans and, particularly, veterans of the Civil War. Very often the headstone that is the subject of attention is that of a soldier who served in a local regiment. In Troy, NY, for example, there are many men from the 125th New York Volunteer Infantry. Our SUVCW Camp, Col G. L. Willard Camp #154, has frequently worked on headstones for this unit and we continue to check the stones we have helped maintain whenever possible.

Work parties are frequently assembled at local cemeteries. At New Mt. Ida Cemetery in Troy, volunteers meet on Earth Day for a cemetery cleanup and to work on stones whenever possible. There is at least one additional work party at New Mt. Ida that results in an assemblage of fraternities from Rensselaer Polytechnic Institute, community members and the Willard Camp. Many volunteers participate in living history organizations and members of Willard Camp are also members of the US Naval Landing Party (USNLP).

This story relates events at one of those work parties that took place in 2014. A number of stones that were selected for work were marked by small yellow flags. Alysia Hamilton, a key long-time volunteer and organizer of the New Mt. Ida work parties with her partner Cameron Smith, scheduled the day's work based on those little flags. She noted that a grant she obtained would be limited to the marked stone and because of the number of volunteers, their initial preparation work preserved the funding for the actual professional repair and/or remounting of stones. That work is done by Joe Ferannini of Grave Stone Matters; Joe directs critical work and would be responsible for mending cracked headstones and mounting and grouting headstone to their bases.

During that work day in 2014, Alysia approached me about a stone that had fallen off of its base and was partially buried in the sod. Some edges of the headstone were beginning to be overgrown by grass and it was in need of retrieval before the burial process might become complete in another season. Although it wasn't marked for cleaning and repair Alysia really wanted to get the stone extracted. I was happy to oblige. A couple one-by-two wood strips were strategically placed next to the stone so that it could be carefully flipped onto the makeshift platform. While this was going on, Joe Ferannini happened to pass by on his way to the next stone that actually scheduled for his rehabilitation work. Joe's first remark was "What's going on here?" As the stone flipped the first words I was able to immediately read were "U.S. Navy." We had recovered the relatively rare headstone of a sailor. The "wow" reaction of all three people was followed by Joe saying how fortuitous and appropriate it was for a Navy re-enactor to have helped extract a sailor's stone. Recognizing the unique situation he said "We're getting this stone done today. . ." Alysia knew the sailor's stone wasn't part of the grant allocation but Joe quickly said that we would be happy to work on the remounting if we could get the stone cleaned, the pins on the stone straightened and the pinholes on the base cleaned out and prepared for receiving both the grout and the headstone pins. Our sailor's name? - - - the stone showed the name "R.J. H. McDougall." He was an African-American sailor who enlisted in New York City and settled in Troy, NY after the war [1].

At this point I decided to photodocument some of the steps in the hopes of using them as an example of what is needed to get an old marble headstone cleaned and back into place where it belonged. What follows are the abbreviated steps in rehabilitating the "stone." The tools of the job include a couple soft hand brushes, a pressurized pump sprayer filled with water and a small spray bottle containing D/2 solution (Figure 1). Information about D/2 and the proper cleaning method is lesson number one taught to volunteers by Joe Ferannini and others. That lesson is repeated by conservators across the nation: "Do no harm to the stone."

D/2 has been extensively studied in comparison to other products and the best practices document of the National Park Service, which are the result of an extensive study, recommends it as a relatively safe product [2]. Chemicals such as sodium hypochlorite (bleach), strong acids, and strong bases negatively impact the stone and have long-term effects that may contribute to the stone's future deterioration. Mechanical methods such as high-pressure washing and wire brushing alters the surface of the stone and may, in the long term, contribute to more rapid weathering. Unlike these methods, biological cleaners tend to be milder and may solve a variety of aesthetic issues without the harmful side effects of harsher chemicals or rugged physical methods. D/2 contains a quaternary ammonium compound ("quat"). In less technical terms that means it is a "surface active agent" or, simply, it acts like a detergent. In addition, quats have disinfectant capabilities against a wide variety of microorganisms that contribute to the discoloration and deterioration of headstones. The disinfection occurs because quats disrupt the membranes of microorganisms. The quat is positively charged and it is attracted to the negatively charged portions of the organisms' cell membrane. Think of it this way: Membranes control how things enter and leave the cell and they are made up of lipids. If the membrane is ruined there is no control on how food enters and waste leaves the cell. The organism then dies. These lipids are related to fats. When you have greasy dishes in the sink, anionic (negatively-charged) detergents, that are also surface active agents, help disrupt the fats and remove them from the dishes. There are other components in D/2 that reduce surface tension and neutralize acids [3].

The steps to cleaning are relatively simple. The surfaces being cleaned need to be kept wet. In this instance the headstone and base were separated so the headstone was placed on the one-by-twos making it easy to grasp the stone so it could be turned and flipped during cleaning.

- The first step is to spray water on the area to be cleaned. Focus on small sections at a time.
- Spray the D/2 on the wet area and let it sit for a few minutes (D/2 instructions indicate 10 - 15 minutes).
- Use the brush in a gentle circular motion. You will see a distinctive change in the color of the liquid as you remove both dirt and biological growth.
- At this point you would rinse with the water in the pressurized water sprayer.
- Repeat as needed and then move to a new area to clean.
- Carefully flip the stone to expose a uncleaned surface and continue the process.

There will be times when the stone will not look clean. However, over time there may be some improvement. The key is to remove the pollutants, dirt and microorganisms that contribute to the decline in the condition of the stone.



Figure 1. Necessary tools and the base and headstone ready for cleaning.



Figure 2. Compare the color of the base in Figures 1 and 2.

Once the stone and the base are cleaned the base may need to be leveled. This involves lifting the base with a simple lever (Figure 2) and using crushed stone, much like the crushed base used for pavers, to level the base and give it a new firm foundation. The pin holes in the base need to be cleaned out of both dirt and excess liquid (Figure 3). The pins on the headstone need to be as straight as possible. At this point the professional takes over the job. A lime grout is used. Once mixed the grout is spread over the base and into the pin holes in preparation of remounting the headstone (Figure 4); it is carefully lifted onto the base and pressed into place (Figure 5). Additional grout is worked into the seam between the stone and base and then smoothed out in the joint (Figure 6). The entire stone is then wrapped in plastic so that the grout can properly cure (Figure 7).



Figure 3. Clean, pins straightened, pinholes cleaned out and ready for grout.



Figure 4. Placement of grout.



Figure 5. Remounting, note filled pin holes.



Figure 6. Finishing touches to the grout.

Rapid drying could cause shrinkage followed by cracking or crumbling of the grout; slow evaporation allows for proper setting. With some free lime remaining in the grout additional carbon dioxide can be incorporated into its structure resulting in strong and self-healing bond (Figure 8).



Figures 7. Grout curing step.



Figure 8. Several months later.

## References

[1] National Park Service, Best Practice Recommendations for Cleaning Government Issued Heavestones, National Center for Preservation Technology and Training for the Department of Veterans Affairs National Cemetery Administration. May 23, 2011. <http://d2bio.com/sites/default/files/NCPTT-Best-Practices-Final.pdf>, or <https://www.ncptt.nps.gov/download/28470/> both accessed on March 9, 2020

[2] National Park Service Soldiers and Sailor database <https://www.nps.gov/civilwar/search-sailors-detail.htm?sailorId=MCD0004>

[3] Safety Data Sheet, D/2 Biological Solution, [https://www.gravestonecleaner.com/wp-content/uploads/2016/05/D2\\_Safety\\_Data\\_Sheet.pdf](https://www.gravestonecleaner.com/wp-content/uploads/2016/05/D2_Safety_Data_Sheet.pdf), accessed on March 9, 2020

## More On-line Help

Brother Leo McGuire, PDC has sent up the following URL for a youtube viedo on the use of D/2:

<https://www.youtube.com/watch?v=7Oz3Ar2mM1s>. In the video the presenter discusses the use of D/2, the tool he uses and keeps in his kit and how the chemical is applied. The short viedo, just over 13 minutes, is worth watching and give you a number of hints to get you started.



This is the opening frame of the youtube video on cleaning stones with D/2.



The presenter show you all of the tools he uses to bring the stones back to life.