Magical Flutes
Uncovering the Secrets of a National Treasure

By Katie Bahr

When he began applying for summer internships last fall, Catholic University junior William Sullivan, an architecture major from Brooklynville, Md., knew he wanted to do something unique. After spending time exploring the Library of Congress’s cavernous galleries and priceless works of art, he decided he’d also like to work in a place that inspired him.

“This is one of the most beautiful buildings in the city inside and out,” said Sullivan. “I’m all about the environment I work in, so I thought, ‘Why not the Library of Congress?’ It’s a once-in-a-lifetime opportunity.”

Sullivan was delighted to find that his summer fellowship at the library would allow him to work closely with a national treasure — the Madison Flute, a rare crystal glass flute that once belonged to a U.S. president, is on display at the Library of Congress.

The Madison Flute, a rare and beautiful crystal glass flute that once belonged to a U.S. president, is on display at the Library of Congress. Members of the CUA community — an architecture student and scientists from the Vitreous State Laboratory — have played a role in working to preserve the flute and others like it.

Sullivan was surprised to find that one of his professors — Lynn Brostoff, a conservation scientist, and Carol Lynn Ward-Bamford, curator of the library’s musical instrument collection — Sullivan spent his summer as a Library of Congress junior fellow, delving deep into the history and science behind the Madrid flute, which are known for their awe-inspiring beauty and intricate craftsmanship.

“There’s nothing like them ever made again. People can’t figure out how they were made,” said Sullivan. “These are true feats of engineering.”

As if working with some of the top musical instrument historians and conservation scientists in the country wasn’t exciting enough for this architecture student, Sullivan was surprised to find that he would also be collaborating with renowned scientists from his own university. Researchers from Catholic University’s Vitreous State Laboratory (VSL) are also helping to study the crystal flutes. For years VSL has been at the forefront of research in managing nuclear conformational changes in the materials in glass. The lab’s interests focus on the study of glass in all its forms.

Together the team worked to better understand the unique methods Laurent used to make the flutes — a process which has never been replicated. By studying how the flutes were made, the Library of Congress team hopes to discover better methods of preserving the instruments so they can be enjoyed by library visitors and researchers for years to come.

A Collector’s Gift
Crafted as luxury items with varying colors of glass, gold or silver keys, and gemstone accents, Laurent’s crystal and glass flutes were once owned by emperors and kings such as Emperor Napoleon I of France, King Louis Napoleon of Holland, King Joseph Bonaparte of Spain, and Emperor Franz I of Austria. They are scattered all over the world, but the Library of Congress houses the world’s largest single collection of Laurent flutes, thanks to the generous donation of American collector Dayton C. Miller in 1941.

Miller, a scientist who earned his doctorate in astronomy from Princeton University and spent his career teaching physics, was a dedicated music lover and flautist. He gradually amassed what would become the world’s largest collection of flutes and flute-related objects, including the Madison Flute.

Because of his love for science and collecting, Miller chose to donate the collection to the Library of Congress. According to Ward-Bamford, Miller donated approximately 1,500 flutes, 5,000 books on the flute, 10,000 pieces of flute music, 1,000 pieces of artwork depicting the flute, and thousands of photographs.

A Closer Look
Today, the Madison Flute is on display in the Whitall Pavilion, a drawing room within the library that also houses five Stradivarius violins, scores written by Mozart, and thousands of photographs.

For much of the summer, Sullivan — along with his research partner, junior fellow Dorie Klein, a sophomore at Smith College in Northampton, Mass. — helped log data on the climate and the flutes by measuring the humidity and temperature levels. Once the research is complete, Brotstoff and Ward-Bamford will use the findings to build new housing for the flutes that will be better suited for their preservation.

Miller and Klein also executed extensive historical research on the flutes, performed X-ray fluorescent analysis, and did exhaustive research into organic glass chemistry to learn about the nature of glass aging and preservation methods being used around the world, said Sullivan.

“It’s very exciting to be involved in something with this historical twist and these unique objects,” said VSL director and physics professor Ian Pegg. “The challenges associated with this become, how do you analyze and learn about the material when you can only get the tiniest sample of the material or none at all?”

Though his internship was not directly related to his major, Sullivan said he found his summer as a junior fellow rewarding. Sullivan is the son of two biologists, he felt comfortable in the preservation lab and enjoyed the research. He also believes his newfound education about glass will help him as an architect.

“Architecture is one of those fields where the more you know, the better experience you’re going to have and the better your work is going to be,” said Sullivan. “Now I know the chemistry of glass and the impact of its environment. Understanding glass aging is important as an architect because you need to consider whether you want your building to show age. Part of becoming a good architect is having that understanding of every little thing and really being a creator of a whole experience, from the doorknob to the roof.”

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