**Artisan's Name:** Lord Aurelio Vitrisoni (MKA AJ Lanphere)

**Title of Project:** *14th Century English Ring Brooch (and Extant Basis)*

## 1.0 - Finished Piece:

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| Front view: Eight gem cabochons of spinel and citrine are set in simple bezels on a sterling silver ring. | Reverse: showing the carved and shaped tail of the clasp pin hooked around a notch in the ring. |

## 2.0 - Historical Basis:

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| Extant 14th Century Ring Brooch<br>Found in Nottingham, U.K. by Mark Shier | Eight-stone ring brooch, modernly crafted by Gaukler's Medieval Wares, in the same style |

## 3.0 - Inspiration

This project got its start during Midnight Madness of Pennsic 2023. My wife, Nyvein bat Rav Adam, a Freescholar of the Academie d'Espee, was performing her duties escorting Her Highness Molly around the market. Nyvein was deeply touched by the deliberate and personal attention that Molly showed to each of the Freescholars; something that definitely takes deliberate effort to do, and that she had no obligation to do. And while walking through each stall, Her Highness' genuine enthusiasm not just for the items for sale, but for the skills of the artisans behind each item stood out plainly.

They happened past Gaukler's Medieval Wares, and Nyvein heard Her Highness expressing similar excitement for a ring brooch on display (shown on the right in Section 2). After swearing that she wasn't about to *purchase* the brooch, Nyvein mentioned that I have made similar pieces inspired by 14th century jewelry and introduced me to Her Highness at the Atlantian Royal Bardic that evening.

As it turns out, Her Highness already remembered me from my display of gemstones at the Known World A&S competition a few days before. After I calmed my heart from learning she already knew my work, we gushed briefly about our mutual love of historic jewelry and she made me promise to send her links to my projects after Pennsic was over.

I met her again when she traveled specifically away from other Royal progress to attend my Shire's event last weekend. And I was again struck by her memory of not just me, but my very recent works in progress. I know that any Royal has dozens of interactions with hundreds of people during their time, but the sense of *being seen and remembered* that Her Highness imparts to people is something that I find deeply, deeply impressive. And beyond that, the sense that she is *truly excited* about the things that people around her are making and achieving is what stands out to me the most. She builds people up in the most genuine of ways: by sharing their joy in their achievements and returning that joy in recognizing them. The Society would be a better place by far if we looked to her example and replicated it in even small ways.

As such, I knew I had to undertake this replication project in her honor. I chose stones that match her colors and a brooch similar to the one she showed Nyvein. And it will be my further honor to present it to her as a Coronation gift when she ascends to the Seafoam Throne.

## 4.0 - History

Ring Brooches are common across Europe from as far back as the 1st Century, hitting their most prominent and varied use in the 13th Century. "The ring brooch was broadly speaking simplest and least assuming of medieval brooches, since it was essentially a practical fastener." [1] They were cloak clasps, shirt closures, apron hooks, bag closures, and more. They represented religious blessings or amulets of protection, and were used extensively by both men and women. They were made from a wide range of materials, from copper alloys to fine gold and silver. [2] The simpler brooches might be adorned with simple chiseled or punched designs and glass imitation gemstones, while more elaborate and expensive brooches could be made from precious metals and adorned with much more valuable rubies, sapphires, and other fine stones.

The brooch in my collection was purchased from Gaukler's Medieval Wares, and dates to the 13th or 14th Centuries. It was collected via metal detector in the town of Nottingham, England. It has been cast as a single piece of brass or bronze, and has six collets to receive decorative cabochons. In some of them, a white paste can be seen that is the remains of a cement used to secure the cabs in place. [2] And in one, a broken piece of what is almost certainly a glass cabochon remains adhered. There is a notch in the side where the pin clasp would have been.

## 5.0 - Tools and Materials

The larger blue stones are synthetic spinel, and the smaller yellow stones are lemon quartz. Since the original brooch likely contained glass stones [2], I don't feel like it's out of place to have used synthetic gemstones here, and there isn't a better blue than these cobalt spinels. Lemon quartz also nicely filled the need for a yellow counterpart stone to match HRM Molly's colors.

All the cabochons are set in simple bezels of sterling silver, on a ring of the same. The original brooch was a single cast piece, with the bezels hammer-set into place around the stones. In mine, each bezel cup is fabricated from two pieces of silver and soldered to the ring. This was a concession made to imitate the appearance of the ring being made of continuous material without actually casting it myself. I'll discuss this more in Section 7.0.

The pin is also made of sterling silver, carved down on one side to allow it to be hooked through a notch in the ring. While I have avoided using silver retaining pins on other projects in the past, in this case I used a heavy gauge D-profile strip, which won't deform easily under load. I felt this would be strong enough for functional wear.

The cabochons were shaped on modern lapidary grinding wheels using silicon carbide abrasive belts. The quartz cabs were polished with cerium oxide and the spinels were polished with tin oxide. The silver was shaped using a jeweler's saw and a variety of hand files. Final polish was done using diamond-embedded silicone polishing wheels mounted in a dremel tool. All soldering was performed using modern fluxes, silver solder of three hardnesses, and an air-respirated acetylene jeweler's torch.

## 6.0 - Procedure

*6.1 - The Gemstones*

For this piece, the stones were chosen based on what I had in my stock that were in the necessary colors. For blues, I had several choices, but settled on synthetic cobalt spinel for the depth and vibrancy of color. To contrast, I chose a pale yellow lemon quartz. I also learned that I need to stock a wider variety of stones in common heraldic colors, I would have loved to use something a little more saturated.

Both types of stones were mounted to small steel dop sticks so that they could be held more easily when I shaped them against the abrasive belts.. The adhesive used here was a modern UV-curing superglue, which I prefer for the strength of the bond and the extremely fast curing time.

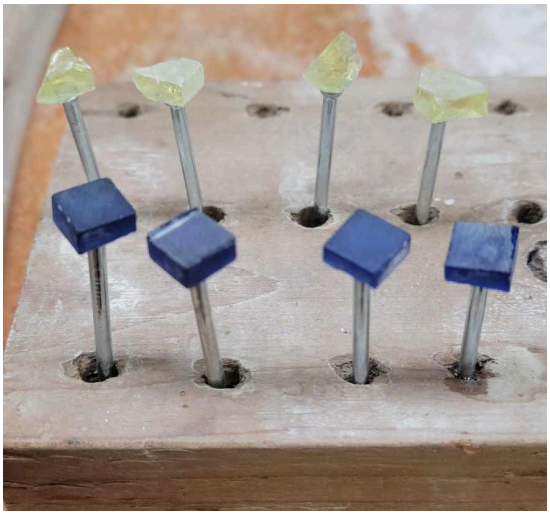

Fig. 1 - Rough stones (Quartz behind, spinel in front) mounted on steel dopsticks.

The gems are formed into a gentle dome shape on a 200 grit belt, then progressively refined in shape and surface finish by using a 400, 800, and 1000 grit belt in sequence.

While a vertically-rotating abrasive stone was used to shape cabochons in the 14th century, [3] in this case the rotation was provided by an electric motor in a modern cabochon cutting machine.

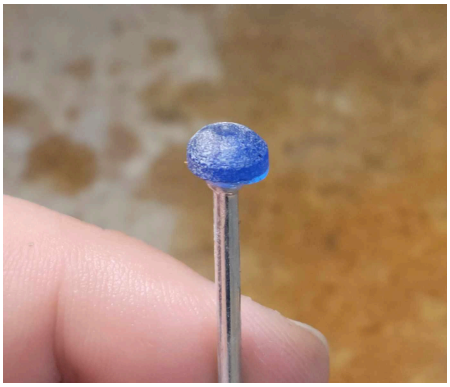

Fig. 2 - A spinel cabochon rough-shaped into a dome after the 200 grit belt.

The final polish was applied by using powdered metal oxides on a leather disc, moistened with water. I used cerium oxide on the quartz, and discovered that spinel does not seem to react well to cerium. I tried aluminum oxide as well before finding that tin oxide gives a quick and high quality polish on spinel. The reason for the differences in performance is due to metal oxides reacting chemically with the stone during the process of polishing, so specific oxides must be used to react with each different gem material.


Fig. 3 - Left, the cabochon machine used in this project. Right, the flat lap with a leather top used for oxide polishing.

*6.2 - Brooch Fabrication*

The bezels are made in a simple process. First, a thin strip of fine silver is wrapped around a gem and cut to size. Next, it is soldered together into a loop. Any warping is corrected, and it is soldered down to a backing plate of 20-gauge sheet silver for the flat

side of the cabochon to sit against. Finally, the excess silver sheet outside the loop is trimmed away by a jeweler's saw and files. Another description with images is available in my writeup of my Colmar Brooch project. [4]

Fig. 4 - The finished cabochons and their matching bezel loops.

Although my stones are all mostly circular, they're still not interchangeable. Each bezel will only fit the stone it was made for. To keep myself from getting them mixed up, I separated each stone and bezel into its own numbered container. Remember folks, the secret to success is excessive labeling!

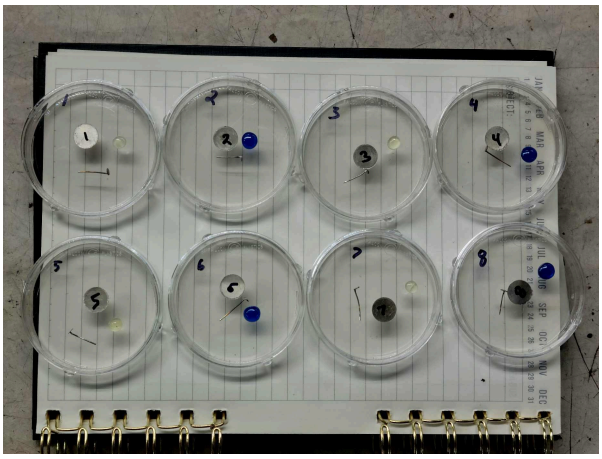

Fig. 5 - Each bezel and matching stone in a labeled container for organization.

After the bezels were formed, I needed a base to attach them to. I took a strip of 8-gauge sterling silver with a D shaped profile and formed it into a circle, then soldered the ends closed. After some cleanup of the joint with files, it was finished.

Fig. 6 - The finished ring, to which the bezels will be soldered.

The next step was to attach the bezels to the ring. This was the single most challenging operation of the entire project for a variety of reasons. As mentioned before, each bezel is specifically matched to its own gemstone. This means that I needed a way to keep track of the placement of the stones around the brooch, and the orientation of the brooch itself in order to set the stones correctly later. Additionally, all eight bezels had to be soldered down simultaneously. If I did them in stages, I risked re-melting the solder of the prior stage and shifting or dislodging previous bezels.

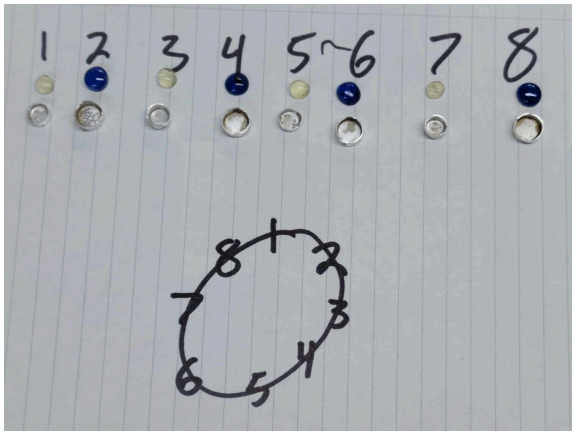


Fig. 7 - Numbered chart showing where each stone will be positioned on the final object.

Fortunately, my labeling system gave me the solution. I filed a small mark on the back of the ring to use as an indicator of “12 o’clock”. Then, a diagram let me label which bezel went where around the ring. Even after soldering, the file mark would remain and let me preserve the correct orientation. I treated each piece with an acidic cleaner solution to ensure a solid join, placed eight pieces of solder on the flat side of the ring at each position necessary, then balanced the bezels on top of the solder. Heating the entire brooch at once with a wide, hot flame allowed the entire ring to heat evenly, which melted all the solder

chips simultaneously. Fortunately, none of them shifted and the soldering operation was a success.

Fig. 8 - Left: each component has the cleaning solvent burned away before soldering. Right: after soldering, thankfully all in one well-bonded piece.

I did have a backup plan if a bezel failed: all the bezel cup components were constructed with Hard solder, and I was doing the attachment operation with Medium solder. If I needed a second attempt, I could use Easy solder to keep the temperature from getting hot enough to re-flow any of the preexisting joins.

*6.3 - Setting the Stones*

To make sure I was setting the right stone in the right bezel, I again referenced my orientation diagram. I placed a piece of dental floss across the bezel cup and tested the fit of each stone. If it fit too tightly or didn't seat properly, the floss would give me a way to pull the stone back out of the cup to make adjustments. Most of the bezels had been slightly deformed in the shaping and soldering processes, so I used a steel burnishing tool to reshape the bezels to fit the stones.

Fig. 9 - Dental floss under a quartz cab while fit testing its bezel.

After some filing to adjust the height of the bezel walls, I was ready to set the stones. This was done by locking the brooch in a Universal Adjustable Work Holder and using a bezel pusher to bend the top of the bezel wall down over the stone. Following that, I used a steel burnishing tool to smooth the silver against the stone.

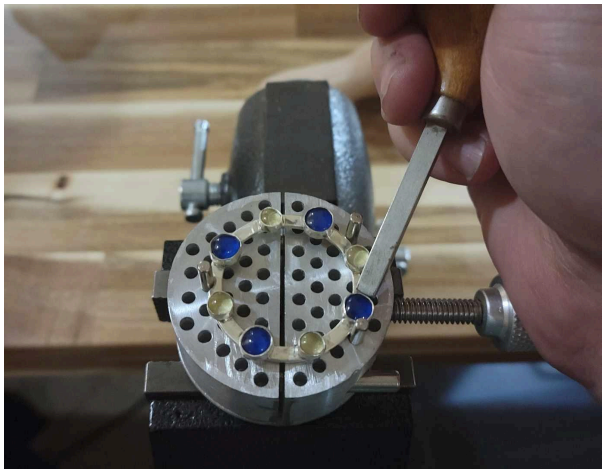

Fig. 10 - Using a bezel pusher tool to crimp the bezel wall against the gemstone.

*6.4 - The Clasp Pin*

The last step was fabricating the pin closure. The extant brooch was missing its pin, but looking at more pieces in the collection online at Gaukler's website, there are quite a few that have the pin intact. They show very simply-made pins where one end is either hammered thinner to be more easily wrapped around the ring, or simply just bent into a loop.

Fig. 11 - Two 13th-14th Century brooches demonstrating a typical shape of the clasp pin. Left [5], Right [6]

I carved mine from the same 8 gauge D-profile stock that I used to form the ring. The pin is a simple spike shape with one end filed thinner to wrap around the ring and hold the pin in place. In order for the pin to rotate around the flat ring and also not rattle freely between two stones, a notch was carved into the side of the ring, matching the same feature on the extant brooch.

Fig. 12 - Notches carved into both modern and extant rings to allow rotation of the clasp pin.

To form the profile, I marked the centerline of the stock and the length I wanted for the tapered section. Then, I held the stock in a hand vise with the top face of the vise making a line between these two points. Shaping the taper on each side was as simple as filing the stock flat to the surface of the vise.

Fig. 13 - Clasp pin held in my hand vise for shaping into a point.

I thinned the stock on three sides to make it easier to bend using hand files, then bent it around a piece of scrap stock to form an open loop that I could slip onto the ring.

Once it was in place, I used my bezel pusher and a light hammer to complete the bend and close the pin onto the ring.

Fig. 14 - The finished clasp pin bent into place around the ring.

Once that was complete, all that was required was a final touch-up of the surface finish from my silicone polishing wheels and it was finished!

## 7.0 - Lessons Learned and Departures from Period Practice

A few specific aspects are different about my extant brooch and the one I created. The first is clear, it's not a 1:1 recreation. In this case I was simply excited to see what I could learn from an actual extant artifact, and wanted to imitate the general style of the simpler brooches of that period. Secondly, it is fabricated rather than cast. I don't have the tools, facilities, or skills to do precious metal casting at this time, so I made my design choices to get as close as I could using the techniques I do know. However, the more research I do into period lapidary and smithing, the more I am compelled to learn how to do at least simplistic casting. The technique is ubiquitous, especially for these brooches [2], and would greatly expand the range of objects I would be able to make.

To get closer to the extant object, I would need to use a thicker silver sheet so I could match the hexagonal profile and the beveled edges of the ring. I opted for a simplified circular profile because it made better use of the stock I had available. I could also opt for taller collets and smaller gemstones that don't overhang the edges of the ring. I also didn't fill the collets with cement to level the gems, but in three cases I did have to shim the cabochons with silver scraps to make them sit at the correct height in their bezels.

Additionally, all soldering and all of the lapidary tasks for this project were performed with modern tools and materials. I don't currently have any interest in exactly replicating medieval soldering techniques, but I am deep in the midst of research in order to cut gemstones in a significantly more period way.

But that is a project for another time.

## 8.0 - Sources

Primary reference was drawn from the extant brooch in my collection.


1. “Mediaeval European Jewellery”,  Ronald W. Lightbown, Victoria and Albert Museum, 1992.

2. http://medievalwares.com/brooch%20manufacture/Cast%20Brooch.html

3. “The Secret Teachings of Gemcutting”, Justin K. Prim, Magus Publishing, 2021

4. https://sites.google.com/view/aurelio-vitrisoni/a-s/lapidary/replicating-the-colmar-brooch?authuser=0

5. http://medievalwares.com/index.php?main_page=product_info&cPath=65_74_109&products_id=2534

6. http://medievalwares.com/index.php?main_page=product_info&cPath=65_74_109&products_id=572



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