

Restoration of Antique and Period Jewelry

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In addition to the very basic skills, know-how and jeweler's tools required in order to approach the task of jewelry repair, there are some additional keys I have found to be indispensable for success in the area of antique and period jewelry restoration. In this discussion, I will refer to jewelry as being antique when it dates to the 19th century and earlier. Period pieces of jewelry are those, which have been manufactured during periods of time reflecting a certain artistic style. These have been described by art and jewelry historians as pertaining to a certain period of jewelry making. The periods from the 20th century are well known. They are the Edwardian Period, the Art Deco Period, the Retro Period, the Fifties Jewelry Period and so on; usually then described in terms of the decades that embraced certain styles of jewelry design.

First it is important to have an ever-expanding working knowledge of all metals, chemicals, gems and gem materials used in jewelry today, yesterday and sometimes the day before yesterday! By "yesterday," I mean in recent historical times, going back to the last 2000 years of jewelry making. By "day before yesterday," I mean before the be-

ginning of the first millennium. There have been pieces from ancient times which I have had the opportunity to work on which have helped to broaden my understanding of jewelry-making techniques in ancient history. Every piece of jewelry that comes in for restoration presents a challenge and opportunity for me to hone my jewelry-making skills and make me a better craftsman.

Patience and determination are two more keys needed to unlock the door for a successful restoration. Some of the examples I will use in this discussion reached a successful conclusion thanks in great part to the application of patience and determination! And finally, one very important ingredient that cannot be overlooked in the process is imagination. Imagination is what allows us to anticipate what may follow in the step-by-step process of jewelry restoration. There are many blind turns in this process and imagination can help guide us in transforming an apparently ruined piece of jewelry into the glistening jewel that can once again adorn a happy client. The images and examples to follow are those of a number of restoration projects I have had the opportunity to work on at different times over the past 20 years. Each restoration, repair or modification presented a unique set of challenges and each project, regardless of how simple or complex, has required careful investigation and strategic planning. The process can be compared to a form of detective work, which unravels the events

leading to the condition of the piece of jewelry in question. The first step, I find, has always been to consider the obvious aspect and then think the process through, taking into account all the consequences of each step before implementing any practical measures.

The first example I would like to share with you is of an early Art Deco platinum, ruby and diamond bracelet dating to the mid 1920s, which had at some point in time been "married" to a pair of solid 14-karat yellow gold bangle bracelets. (Fig. 1) The ruby and diamond bracelet had been cut into two equal sections, then the clasp was removed and the two lengths were soldered frozen between the gold bracelets, which had been hinged, giving a "new" look to the original bracelet. The objective here, of course, was to set the bracelet free and restore it to its original condition.

The process began by cutting away the bangles from the bracelet (Fig. 2), then filing the remaining gold as close as possible to the platinum sides of the bracelet in preparation for an acid treatment of dilute aqua regia (in this case, three parts hydrochloric acid with one part nitric acid and one half part water). Before undertaking any type of acid treatment, when possible, I remove any

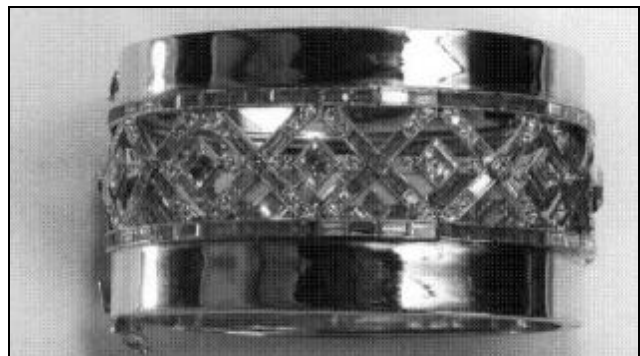


Figure 1

parts, which are not going to require treatment. It is also always good practice to take general precautions: work in a well-ventilated area; protect your hands with rubber gloves; use eye protection and an air filter for the mouth. I would like to stress here the importance of sanding away as much as possible of the gold without actually touching the platinum. If this is done, the steps, which follow, will be made far easier.

Submerging the bracelet in the aqua regia started the process of removing the difficult-to-reach gold and solder from the bracelet. As in all acid treatments, the progress of the acid was monitored every ten minutes or so. Constant checking also serves as an ounce of prevention to minimize any re-soldering and re-filigree work later by making sure the platinum affected by the acid is kept to a minimum. If the temperature of the solution is too cold the progress can be slow; however, this can be accelerated by a very small increase in temperature. Since one degree of

temperature increase serves to strengthen the acid by 10 times, it is essential to keep a very close watch on the progress. Another factor, which may impede the process, is the development of a silver chloride residue caused by the reaction of the acid to the solder; present, more or less, depending on the amount of silver present in the solder. This film of silver chloride will obstruct any further desired effect of the acids on the solder. Silver chloride may be removed by scraping but my preferred method, which was used with good results on the bracelet, is to submerge the piece in a solution of aqua ammonia for five minutes. The solution can reach every crevice and clean away the silver chloride. This step is followed by re-rinsing the piece before submerging it again in the aqua regia. In this case, submerging, watching and cleaning went on for two days until all the gold solder was removed from the bracelet.

Once free of solder, all the filigree was examined by probe since

any contact with the aqua regia would compromise the strength of all the platinum wire by attacking the solder points. In addition, re-tacking of the solder points with white gold solder was necessary, as the use of platinum solder would have required such a high temperature it would burn the diamonds set in the bracelet. The gemstones were protected prior to the application of heat in the usual manner with the use of boric acid and denatured alcohol. This time-consuming procedure demanded an exacting and precise control of the torch; particularly when applying solder between the link joints in order to prevent them from freezing. Since the original clasp of the bracelet had been removed, the next step was to rebuild the clasp and reassemble the bracelet. The rubies and diamonds were all checked and secured before polishing and returning the restored piece to a very satisfied client (*Fig. 3*).



Figure 2



Figure 3

I would like to add here that the jeweler who took on the job of “modernizing” the bracelet is owed a very special debt of thanks. This jeweler skillfully assembled the different pieces in such a manner as to make possible a complete restoration. Not only was the bracelet brought back to its original condition but real value was also restored to a fine period bracelet. In its previous state the fine Deco piece would have been considered far less valuable in the marketplace sandwiched, as it were, between the two 14-karat gold bangle bracelets. The client was easily able to justify the expense of the restoration if only for the dramatic increase in its value.

A client brought in a 24-karat yellow gold-hinged bangle bracelet and wanted to replace the original screw-type clasp, which was difficult to work (*Fig. 4*). In addition, she wanted to add an extension of about one inch to the bracelet. The piece was an antique bracelet made for the Chinese market toward the end of the 19th century, designed for the slender wrist of a Chinese woman. The bracelet was fabricated from gold sheet, which was decorated utilizing chase and repoussé techniques to create floral designs emblematic of the seasons. The extension was made by first carving a wax insert echoing one of the designs already present (*Fig. 5*). The wax was then cast in 24-karat gold and welded to the bracelet with 24-karat gold sheet. The heat created by the torch welded both ends of the segment. It was imperative to control and localize the heat to prevent the melting of the adjacent decoration; a task that would have been much easier by the use of a laser.



Figure 4

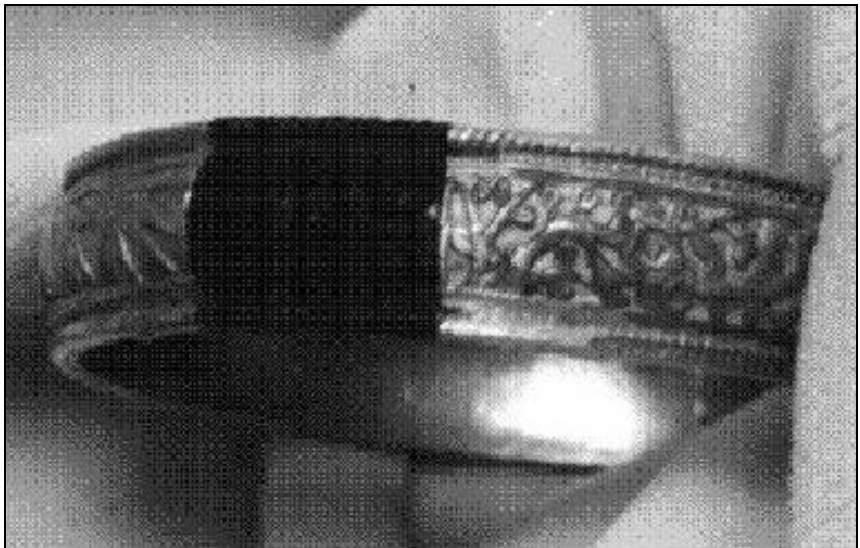


Figure 5

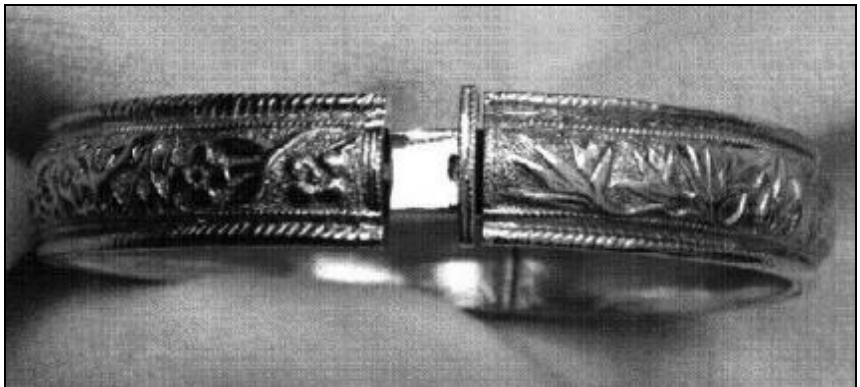


Figure 6



Figure 7



Figure 8

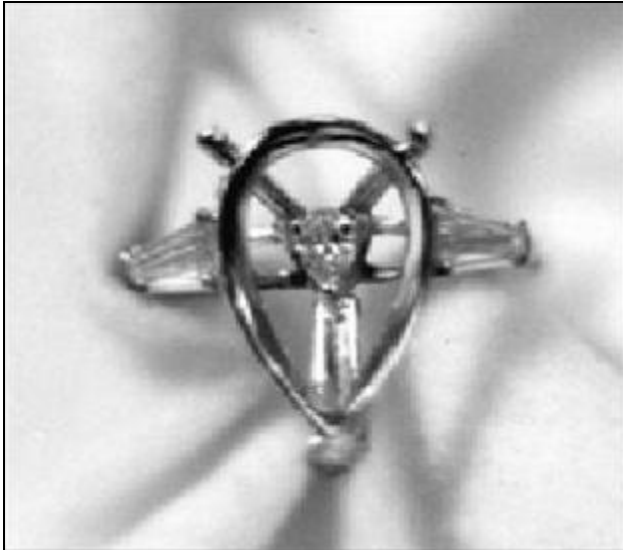


Figure 9



Figure 10

In this case, the mission was accomplished the old-fashioned way without the laser, as the job came in during our pre-laser years. As can be seen by the accompanying images, the clasp was removed and replaced by one created for the piece. Proper removal of the screw-type clasp assembly (*Fig. 6*) was done with respect for the jeweler who might one day be given the task of restoring this bracelet and replacing this newly fabricated clasp with the original one.

Another project, which I found of particular interest, was not so much a restoration, rather a modification of an earlier-period diamond and platinum ring. Though this style of mounting is still being made today, this ring was most likely made during the late Deco Period of the 1930s. The ring was centered by an old-cut, 4.5-karat, pear-shaped diamond, and set on either side with

tapered baguettes. The client found bothersome the window effect caused by the large open culet of the pear shape (*Fig. 7*).

By modifying the lower portion of the basket and building a setting for a smaller pear-shaped diamond we were able to mask the window and enhance the appearance of the large diamond (*Figures 8-10*). This could only be achieved effectively

by the perfect alignment of the large open culet with the table of the smaller pear-shaped diamond.

The next example illustrates how the art of restoration runs parallel with the art of reproduction. In other words, it helps immeasurably to be able to build in full detail a piece of jewelry that needs restoration. On the other hand, it is also by working on early pieces that one gains a more thorough understanding of how these sometimes-complex pieces of jewelry art have been made. It is something like the concept of reverse engineering where, by taking something apart, the knowledge of how to fabricate the item is understood.

A wide platinum and diamond Edwardian bracelet (circa 1911) was brought in by a client who also wanted the bracelet to be worn as a choker (Fig. 11). With great success we were able to match the exquisite platinum work of the original bracelet and create both the male and female connections of the lacy platinum and diamond design so typical of the Edwardian era (Figures 12 & 13). Also required in order to complete this project was special attention to the matching of the old-cut diamonds that were used during this period of jewelry making.

Often pieces are brought in that had been subjected to previous repair attempts. In this case, an Edwardian platinum and diamond bracelet was brought in, having been repaired by someone with an apparent lack of understanding of and total disregard for the piece of jewelry. Several link joints had been soldered frozen using yellow gold solder (Fig. 14). For some unknown reason, one joint was cut away on either side, and soldered frozen at an unnatural angle. The normal course of action would have been to rebuild the gallery of both links, but with the help of laser technology this problem was solved in a timely,

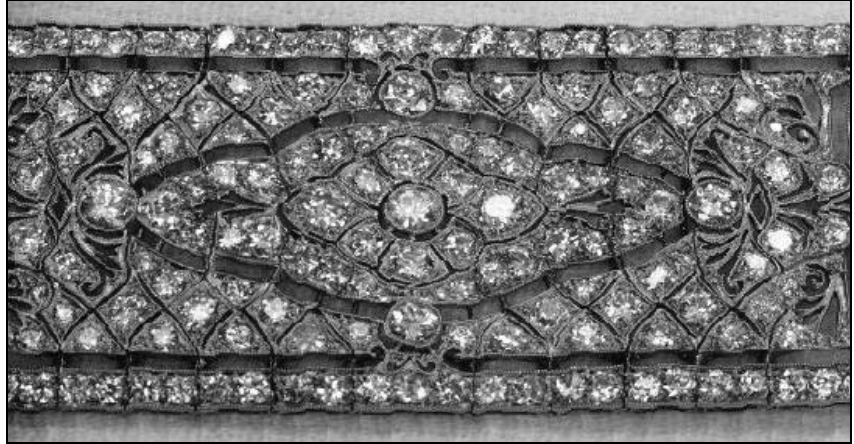


Figure 11

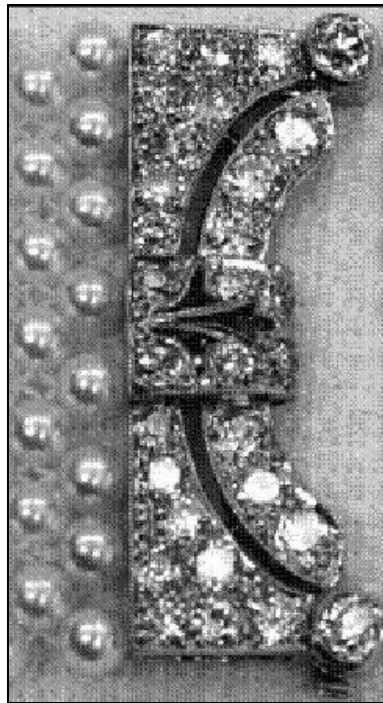


Figure 12

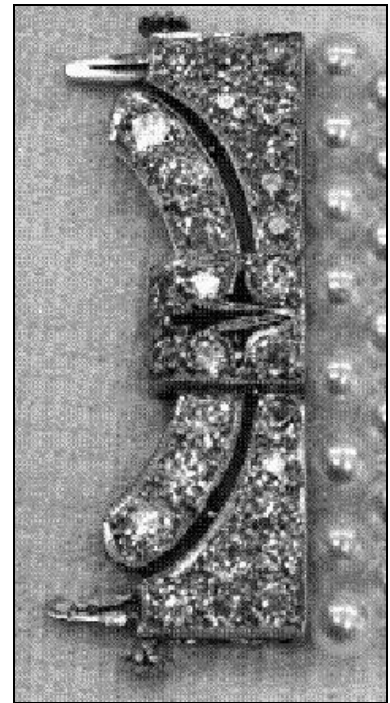


Figure 13



Figure 14

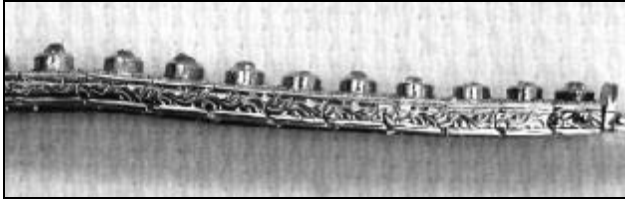


Figure 15



Figure 17



Figure 16

effective fashion. We were able to save most of the original gallery work by first removing the gold solder with a carefully monitored acid treatment. We rebuilt the hinges, which were then welded with the use of the laser.

Finally we re-engraved the gallery to restore the bracelet to its original flexible condition (Fig. 15). Whereas this bracelet example has demonstrated the use of the laser in action, it would have still been possible, though admittedly slower, to reach the goal of restoration without such equipment.

In this next example we can see where, in some cases, the use of laser technology is indispensable

when attempting to “bring back” certain pieces, which require seamless precision. This Art Deco platinum and diamond ring was made in such a way as to enclose all the diamonds within one geometric bezel. Though not “invisibly set,” the diamonds were set touching girdle to girdle. The bezel had worn to the point where the diamonds had started to loosen and move, thus causing the central diamonds to fall out. The edges of the bezel were rebuilt with the laser, enabling us to save all the original work supporting the diamonds and the gallery

(Fig. 16). The result, as can be seen in the photograph, was the seamless reconstruction of the ring (Fig. 12).

Another early Deco platinum, ruby and diamond ring was brought in which had suffered at the hands of someone who had probably tried to size the delicate ring on a stretcher, thus causing the channels for the stones to widen; breaking all of the a jour work (Figures 18 & 19). This caused many of the stones to fall out. The jeweler had then tried to save the piece for delivery to an apparently nearsighted customer by filling the channels with



Figure 18



Figure 19



Figure 20

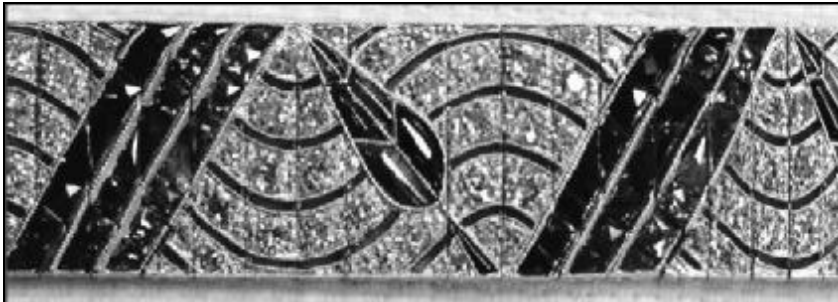


Figure 21

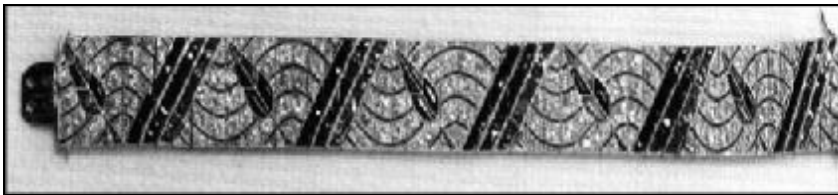


Figure 22

glue. The rebuilding objective here was very clear. Again, with the help of the laser, the piece was saved. After cleaning away the glue, we closed the gaps and rebuilt all the broken joints, the gallery and lips of the channels. The missing stones were replaced by locating new stones matched for color and cut with those which remained in the setting. The ring had belonged to the client's mother and she attached great sentimental value to it; thus the costs for restoration were easily

justified.
(Fig. 20)

The next example is of a visually stunning, very well made Art Deco bracelet. Set with calibre-cut, French-cut sapphires, sapphire cabs and diamonds, this platinum bracelet is a perfect example of incredible design and craftsmanship. Unfortunately inherent engineering defects were responsible for most of the damage the bracelet had endured over the years. A number of previous repair attempts were apparent

(Fig. 21). As can be seen with the accompanying illustration, the break was not straight but rather in the form of a zigzag. After addressing the restoration project in the usual way and arriving at a repair strategy, the restoration was carried out with great care. With the help of the laser, all the channels were rebuilt and all the connections were welded. Missing stones were replaced with well-matched French-cut sapphires; sapphire cabs and period old European-cut diamonds. Though the restoration brought the bracelet back to its original condition (Fig. 22), the structural engineering defects of the piece would make another such repair almost inevitable, especially with continual use.

This 18-karat gold pocket watch was made for Tiffany and Co. around the turn of the last century by Patek Philippe. The outside of the case was fully engraved and the inside of the case was engraved with a message surrounding the maker's marks and serial number in a semi-circle on the bottom half of the case (Fig. 23). The task given was to remove the engraving from both the outside and the inside of the watch case and to keep intact the original maker's marks and serial number which would be critical for retaining the full value of the piece in the marketplace. A critical aspect that had to be considered before applying laser technology to this project was to first make sure that the gold to be used in filling all the engraved areas would match the color of the existing watchcase. After successfully matching the color, all the engraving was filled in with the help of the laser. The surfaces were then sanded down level with the original surfaces of the watchcase, and finally turned on a lathe to achieve the original finish (Fig. 24).



Figure 23



Figure 24

My next example of antique restoration is an antique silver-topped gold and diamond flower brooch from the Victorian Period, circa 1850. The piece came in showing a broken section which had, at some point, been reattached with a generous amount of lead solder that can be seen from the reverse image of the brooch (Fig. 25). The mission, of course, was to replace the broken section. In order to rebuild the flower petal, we began by cutting away the lead-covered broken section before fabricating a new silver-topped gold section (Fig. 26). We welded the new section with the laser and thereby avoided affecting the oxidized finish already on the brooch. Proper diamonds of the period were found to match the existing diamonds on the brooch, which

were then set into the new section. Finally the new section was oxidized to match the rest of the brooch (Fig. 27).

As mentioned previously, the highest hurdles I have had to overcome in the field of antique and period jewelry restoration have been placed there by jewelers who have literally slashed and burned their way through a so-called repair. It only takes a little bit of awareness and common sense for us to prevent the ruin of a perfectly good piece of jewelry. Likewise, it only takes a little bit of impatience or laziness for us to do the reverse.

This next example shows how a near tragedy was averted. A client brought in a wonderfully made platinum, diamond and platinum wire mesh watch, dated to 1919,

which had been broken in the area where one would expect the most damage: the part which would have been repeatedly folded over a woman's wrist next to the watch case. The platinum wire mesh had been unraveled and the connections on some of the box settings had been broken (Fig. 28). In addition, the back of the engraved watchcase



Figure 25



Figure 26



Figure 27

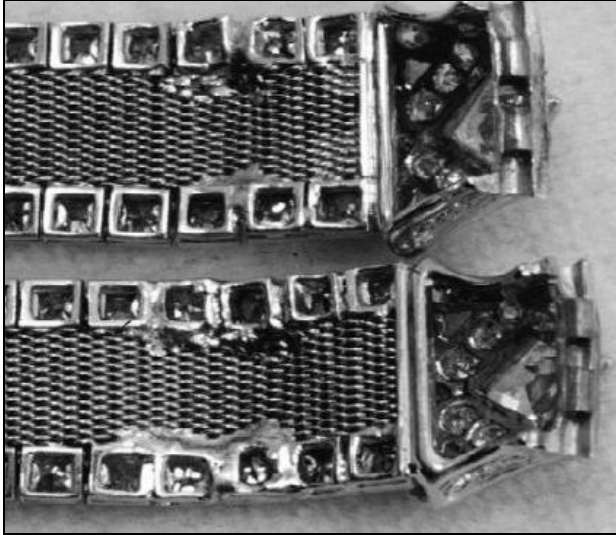


Figure 28



Figure 31



Figure 29



Figure 32

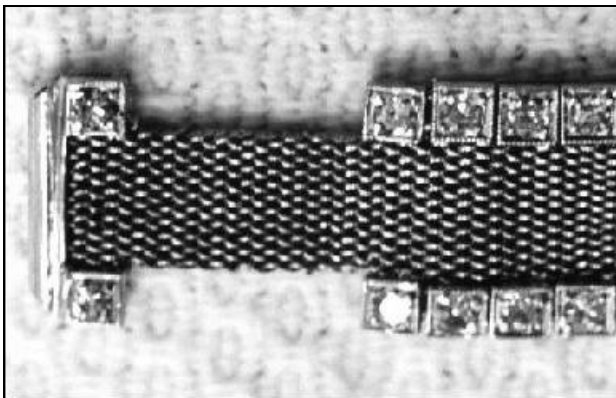


Figure 30



Figure 33

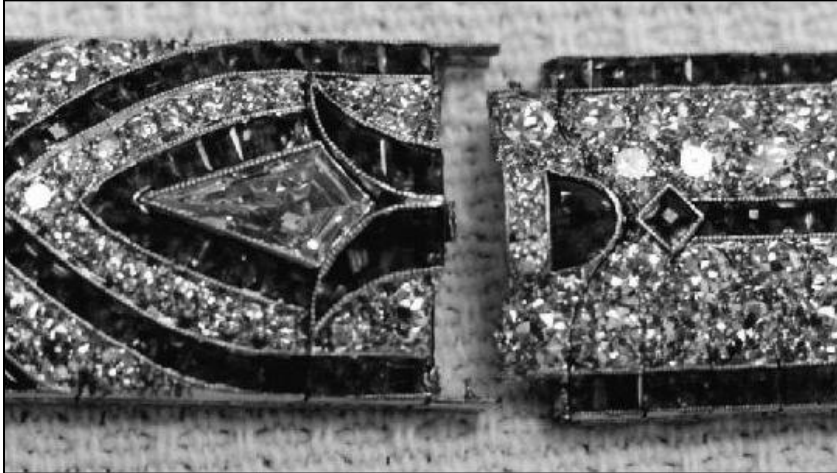


Figure 34

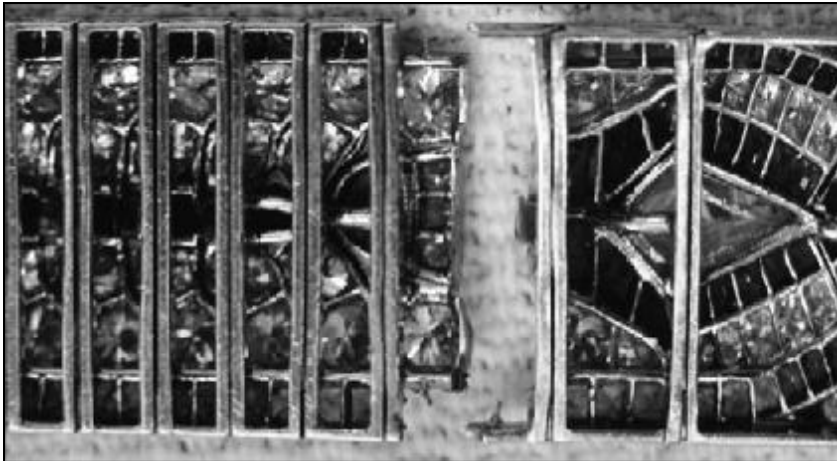


Figure 35



Figure 36

needed to be filled in and resurfaced (Fig. 36). Unfortunately, someone had attempted to repair the break and in the process basically massacred the watch by trying to mend the break with oversized dollops of solder. Normally considered

as an impossible job, the challenge was accepted and the restoration process began. The first step was to free the mesh links. To accomplish this we chose to attempt the acid treatment already discussed. After repeated checking it became

all too clear that the acid treatment was not working, as the solder used was too hard and resistant to the aqua regia. Longer exposure to the acid would have, in my opinion, compromised the wire mesh bracelet. When Plan A didn't work we, of course, went to Plan B, which was to remake the mesh section and rebuild the damaged box settings (Figure 30). The smallest draw plate in the shop was for 0.2mm wire and the wire for the mesh measured 0.1mm. In order to finish, we made a draw plate especially for the watch bracelet. Once we matched the thickness of the wire, the mesh section was then fabricated. The mesh is composed of an intricate network of left- and right-running spirals interlocking to create the weave or mesh effect. The damaged box settings were reproduced and the newly fabricated elements were assembled (Fig. 31). The original diamonds from the damaged settings were reset into the new boxes (Fig. 32). We then filled the engraving on the back of the watch case using a laser, then followed by sanding and refinishing the surface to the original matte finish. (Fig. 33)

And, yes, it does happen: the best-case scenario does come walking in from time to time - a spectacular Art Deco, late 20s emerald, diamond and platinum bracelet with a clean virgin break (Figures 34 & 35). No one had interfered with the piece so we had the opportunity to enter a somewhat delicate operation without having to undo secondary repair damage. With use of a laser we simply welded both sides of the break together, rebuilt the broken a joints, reset the emeralds and re-engraved the sides of the bracelet (Fig. 36).

Through the restoration of antique and period jewelry I have gained an ever-increasing knowledge and appreciation for the crea-

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tion of fine jewelry. I am grateful to the master jeweler who has most exemplified the art of being a jeweler, my uncle, Ernesto Eichberg. With his help I was able to develop the technical skills and common sense so much required in this field. With

those skills I have been able to take advantage of technological advancements such as the laser, which I have put to use in tackling jobs that would have been impossible earlier. Though technology will surely produce more such tools for

us, it is critical that we develop those skills which, when it becomes necessary, will allow us to go to Plan C. In other words, "if we can't build it, Let's not mess with it!"