After almost becoming a lost art, **Chasing and Repoussé** are currently experiencing a modern Renaissance. Metalsmiths worldwide are discovering the potential of these techniques for creating unusual, intricate designs on jewelry, hollowware or other forms of metalwork.

Valentin Yotkov

The **Valentin Yotkov Studio** is the only school in the United States specializing in Chasing and Repoussé instruction. If you are interested in learning the basics, or wish to advance and master your skills, please call (718) 852-8640 or email: school(at)valentinyotkov.com

Information on Classes and Workshops is available at the Valentin Yotkov Studio website: *valentinyotkov.com*

The following excerpt is taken from Valentin Yotkov's book-in-progress, *Chasing and Repoussé – a Mystery Revealed*.

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The Magic of Sculpting in Metal

A Brief Introduction to Chasing and Repoussé Technique and Process

This is how, I believe, chasing and repoussé was done 2,500 years ago when my ancestors—the legendary Thracian Masters—created their timeless gold and silver treasures. I learned from their works. When I first saw their amazing pieces of art I felt excited and inspired as never before. I felt as though I had just opened my eyes and seen the light for the first time. Chasing and Repoussé has became my passion in life.

"Mermaid" bracelet. 22K gold cuff with Australian boulder opals and Paraiba tourmaline. Collaboration between Valentin Yotkov and his apprentice Sharon Fosko.

Step One: The strip of gold is placed in a pitch bowl and the design is chased on the front of the piece using straight and curved liners.

Step Two: The piece is then placed face down and the relief is raised from the back of the metal using punches of different shapes and sizes.

Step Three: After raising the relief, the metal is annealed and put face up in the pitch for final chasing.

Step Four: The bracelet is shaped over a mandrel and the bezels are soldered on. The height of each bezel is adjusted by sanding the top.

Step Five: Setting the Stones

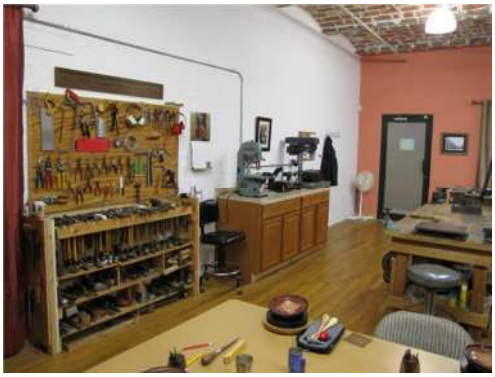
Different Views of the Finished Bracelet

Ornamental Chasing And Repoussé

If you have not yet fallen in love with Chasing and Repoussé, most likely you have never had an opportunity to learn these companion techniques. Chasing is magic, it is beautiful and exiting, and it is ADDICTIVE. Chasing is the FINE ART of metalsmithing. Many of us have stood speechless before masterpieces of Chasing and Repoussé displayed in museums. We marvel and admire the skills of the ancient Thracian and Scythian goldsmiths and secretly dream of creating such beauty with our own hands. At the same time most of the major art-oriented publications unfairly overlook the increasing growing interest in these techniques and the demand for more information on the topic. The fact is that over the past several years, Chasing and Repoussé have been experiencing their modern Renaissance and have once again become an important element of contemporary jewelry and hollow ware design. Chasing can add dimension and a distinctively unique touch to your work. It offers endless variations of design and surface embellishment. An introduction to this technique can change your life and the way you work forever.

What is the difference between chasing and repoussé?

In simple terms, working on the front of the piece only is called chasing. Repoussé is the combination of tracing the design on the front of the piece using liners (tracers), raising a relief by pushing from the back using different punches, and finally working the details on the front of the piece. This method is the classical repoussé technique. There is also a "direct" repoussé in which the design is drawn or transferred on the back of the piece, and the relief is raised directly from there, thus eliminating the initial tracing of the design as described in the definition of chasing. Direct repoussé requires significantly higher skills, but it saves time and is more appropriate for the execution of contemporary designs.



Valentin Yotkov Studio
Brooklyn, New York

I invite you to pay an imaginary visit to the **chaser's studio**. There we see a small but sturdy table, usually 29" to 31"in height. The table is close to the window as defused sunlight is best for chasing on non ferrous metals. On the table is an 8" diameter cast iron bowl over a round rubber pad. The bowl is filled with Red German pitch and positioned over one of the table's legs to avoid vibrations during chasing. A beautiful set of chasing tools is placed face up in a simple can and beside it — a couple of chasing hammers. At the far end

of the room we spot a medium size silversmith's torch, a combination of natural gas and compressed air. The torch is installed under a small hood built of sheet metal or aluminum, which is connected to an exhaust fan for adequate ventilation. On the walls — small pieces of paper with hundreds of drawings, and maybe a few colorful posters depicting inspiring artworks from a gallery or museum collection. Some of the artist's latest works are proudly displayed in a showcase. This is the ideal picture of a chaser's studio, a perfect set up which requires minimum investment and provides the artist with the necessary comfort. From our quick studio tour we notice that the necessities for the chaser are the pitch bowl, the chasing tools and hammers, and the appropriate size and mix combination of the torch.

The Pitch

In my opinion the best pitch available on the market today is the Red German pitch. It can be purchased from Allcraft, New York (Tel: 800-645 7124) and is perfect for chasing small scale designs on copper, silver or gold. It provides firm support for the metal during chasing, and yet it is soft enough to allow embossing a shallow relief using the repoussé technique. It melts at a relatively low temperature and can be safely manipulated and shaped by hand. As a precaution, I would recommend you dip your fingers in water before attempting to handle hot pitch. Remember, if the surface of the pitch appears glossy, it is too hot to touch.

If a gas line is not available in your studio, you may substitute by using the largest tip of the acetylene torch, but be extremely careful not to overheat and burn the pitch. If overheated, pitch turns into carbon and loses its ability to support and adhere to the metal. Remove the burnt area immediately to avoid further contamination of the pitch bowl. A regular heat gun is also sufficient for melting or removing pitch from your work and can be purchased from most hardware stores. For projects requiring very soft, or very hard pitch use the pitch supplied by the North West Pitchworks in Washington. (Tel:360-715 1772) If possible, avoid using the old black pitch, containing tar. It is very toxic, produces a lot of smoke and will burn your skin severely upon contact. Often, when melted, it flows uncontrollably and covers most of the metal surface, living no space for the design.

The Pitch Bowl

An 8" diameter cast iron bowl is our best choice. It comes in the shape of a half sphere along with a round rubber pad. Because of it's shape and weight, the bowl can be positioned in any convenient angle for best comfort while working. Rubber pads are often too large in diameter which causes the bowl to shift easily from its position. This can be eliminated by folding and placing an old hand towel under the pad. Using the stainless steel bowls for chasing should be avoided as those are very light in

weight. For chasing large pieces, a large cast iron frying pan can be used. You may also build a wood frame with the desired dimensions and attach it to a piece of plywood. Melt the pitch in a separate container and pour into the frame. A minimum of 3" layer of pitch is necessary.

To prepare the pitch bowl put the pitch in a plastic bag, break into small chunks and put it in the cast iron bowl. Set your kitchen oven at 350F. Put the bowl with the pitch on the middle rack over a sheet of aluminum foil. In approximately 30 - 40 min. the pitch will melt. Depending on the actual temperature in your oven, the melting could take a bit longer. Wait until the surface of the pitch becomes smooth and level. Tap carefully with a piece of wood on the outside of the bowl to force the air out of the pitch. Add more from chunks of pitch, if necessary, to fill the bowl up to about 1/8" from the top. Do not overfill. Avoid any spills on the outside of the bowl. Do not attempt to handle the hot bowl and pitch and do not leave the pitch bowl in the oven unattended. Once the pitch is melted and ready leave the oven door open and let the pitch air-cool for several hours.

Chasing Hammers

Chasing hammers are truly unique in design. The large, flat, or slightly dome face on one side helps the artist aim and strike the back of the punch without having to look at it. Attention should always be focused on the working end of the tool that is in contact with the metal. The other side of the hammer is shaped like a bowl and can be used when raising a larger area of metal is necessary.

We need at least two hammers — one relatively light in weight, the other heavier. The light hammer is used for tracing and chasing, the heavy one for embossing or raising the relief. For small jewelry designs, especially in gold, I would recommend the use of chasing hammers # 22 and 26; for larger designs and/or hollow ware use #26 and #32, respectively.

When you purchase your chasing hammers, ask for the ones with the pistol-shaped handles. They fit better in the palm of your hand and are by far more comfortable than the round shaped ones. The handle of the smaller hammer should be filed down at it's narrowest part to about 2/3 of the original diameter. This will provide a springy action and allow the hammer to bounce back after striking the punch. It also reduces unwanted vibrations as well as the stress on your wrist. An interesting suggestion made by Alan Revere was to burn the varnish of the hammer's handle and sand the wood to a nice finish. The handle would then absorb the unpleasant perspiration from the hand which results in better control over the hammer.

Chasing Tools

If you are seriously determined to learn Chasing and Repoussé, you need three things: patience, good instruction and quality tools. A good set of chasing tools is your most valuable possession, your personal treasure. Always use the right tool for the right job, never substitute with other less appropriate shapes or sizes. Take the time to make your chasing tools by hand. This is a slow, meticulous process, but your efforts will be rewarded. Make 3 to 5, even 7 sizes of each tool. This will give you the ability to execute any size designs ranging from small jewelry to large hollow vessels. If you work with jewelry only, or hollow ware only - 3 to 5 sizes would be enough.

Tools should be made of the smallest appropriate size steel stock. The most commonly used sizes are those between ¼ " and 1/8 " (both round and square) cut into 4" to 4 ½ " lengths. Shape the tool roughly on the 36 grit grinding wheel, then continue to work by files, 400 and 600 grit sand paper, and at the end polish with steel compound. Polishing will eliminate even the slightest imperfections.

All tools must be hardened by heating to a bright orange color and then quenching immediately into oil or water, depending on the type of steel being used. Hardening makes the tools brittle, therefore they must be tempered as well. Clean the metal by sanding until its natural color is revealed. Heat the hardened end to a light straw color and quench again.

After the tools are finished, you may wrap them with an electric splicing tape or a tennis racket tape. This will increase the size of the tool (but not the weight) and will make it safer and more comfortable to the hand.

Chasing tools can be divided into 5 main categories: Liners, Raising Punches, Planishers, Matting Tools and Stamping Tools.

- **Liners** are generally used for chasing straight or curved lines. They have a relatively sharp edge on the working end. We need one set of fine liners and a set of heavy, blunt liners.
- **Punches** are used to raise the design from the back during the repoussé process. These tools are rounded, with soft curves and no sharp edges. The surface of the

working end is roughened by sanding, or filing in order to grip and move the metal easier. Shapes may vary, but a basic set should at least consist of an oval, round, square, tear drop, rectangular and half-round punches.

- **Planishers** are mostly used to smooth out parts of the design, to define the details and to create a contrasting, reflective finish on the metal surface. They vary widely in shape and can be round, square, oval, diamond, and even a "hot iron shape".
- **Matting tools** help us achieve different "colors" or textures on the metals surface. The working end of those tools is textured by hammering it with a center punch, or by filing or even cutting shallow lines or other patterns using a blade. Those patterns are then imprinted into our metalwork by rapidly striking the tool with a hammer. Care should be taken not to strike twice over the same spot as this would change or ruin the matting effect. The most common shapes for matting tools are diamond, round, square and rectangular.
- **Stamping tools** have the widest variety of shapes. We use them to stamp simple designs such as hearts, leaves, stars or even circles by a single hammer stroke. The tool is usually held vertically in relation to the metal. Very little experience is required for this type of chasing and such decoration, unless carefully designed, often has little or no artistic value.

Another unique tool, the snarling iron, is often used for raising designs on hollow pieces which have a small neck opening and the inside of the vessel can not be accessed with regular chasing tools. The snarling iron has a long arm bent at a 90 degree angle at the working end, which is slightly domed and polished. One side of the tool is secured in a vise while the other side is placed inside the vessel, exactly under the area to be raised. The tool is then struck with a heavy hammer causing the tip to vibrate and raise the metal. Once the general raising is completed the vessel is filled up with pitch and the design finished by chasing from the outside. Using the snarling iron requires advanced skills, precise control over the tool and fine coordination between hands.

Lee Marshal from Bonny Doon Engineering, Inc. is currently working on developing an automatic snarling iron. Although I am, in general, against using machinery in producing and decorating designer hollow ware, I believe that this one will help significantly reduce the physical effort, involved in this process without affecting the value of the artwork. I myself would definitely like to give it a try.

There are a number of other tools and materials which can be used in Chasing and Repoussé. Some of those are brass and wooden punches, sandbags, leather and rubber pads, steel and lead blocks, plasticine. Of course, no matter how simplistic this sounds, I must say, the best tools are our

own hands. No machine can ever produce the beauty, and the warmth of a handmade piece. I love doing things "the old way" and seek to revive and preserve the precious skills of our ancestors. I am happy to share my knowledge and experience with everyone who is eager to learn. Here are the different stages in the execution of a repoussé design:

The first important step is **preparing the metal**. Usually copper and silver come from the supplier dead soft. If the metal is hard, anneal it. Always work on a clean, grease-free and oxidation-free surface. Cut the metal to a size which will allow at least ½ inch space between the design and the outside edges. Bend all four corners at 90 degree angles, approximately 1/4"from the corner. Coat the back of the piece with mineral oil, or regular Chap Stick (suggested by Anne Larsen Hollerbach). This will help you remove the metal from the pitch easier after the chasing is done. Heat the pitch with a soft flame until it melts approximately ¼ " below the surface and place the metal in the middle of the pitch bowl. Press gently to force out any air pockets trapped between the pitch and the metal. The pitch will also flow over the edges and keep the metal securely in place. You may speed up the cooling by placing the bowl under running water for 3 to 4 minutes.

The second important step is **transferring the design**. Graphite carbon paper works best on metal. Be sure to have the carbon paper with the appropriate side down and slide it under the drawing. Transfer the design onto the metal as accurately as possible, especially if it consists of a repetitive pattern.

You are now ready for the **initial chasing** of the outlines of the design. Fine liners are used for this chasing. Hold the liner in your right hand if you are left handed and in your left hand if you are right handed. Place the tool over a line, tilt the top end of the tool slightly away from the direction in which you would like it to move and tap lightly with the hammer until the tool starts moving. Chased lines should be deep enough so that they can be visible on the back of the metal when the embossing is to be done. Hammer frequently, but move the tools slowly to create a smooth, evenly deep and wide line. With a little practice you will be able to follow the curves of the design and successfully complete the initial chasing.

To remove the metal, carefully heat the surrounding pitch and lift using an old screw driver or any blunt tool. Keep heating the metal and remove as much of the pitch as possible, allowing it to drip over the bowl. Wipe off the remnants with a cloth and clean completely with lacquer thinner. At this time bend the four corners of the metal in the opposite direction so they can be dipped into pitch while the back of your work is faced up. Remember to coat the metal with mineral oil or Chap Stick. Heat the pitch again and place the metal in the middle of the bowl. Cool under running water and then wipe off excess water carefully with a towel to prevent your chasing tools from rusting.

You are now ready to start **embossing the design**. Select the appropriate shapes and sizes of raising punches. Raise the design using the heavier hammer, accurately following the projections of the originally chased lines as a guide. Be careful not to raise any areas which are part of the background. Chasing is not about stretching the metal — it is moving it. We move the metal towards the deepest parts of the relief, where it is needed the most.

Raising should be done gradually, in steps. Do not attempt to reach the desired depth at once. "Listen" to the metal, often the metal itself offers interesting suggestions and tells you which way to go. A piece of plasticine pressed into the raised areas will take the impression and give you a pretty good idea about what the front of your work looks like. If raising a high relief (over ½") you may have to anneal the metal and mount it back on the pitch bowl to continue without tearing.

Once the raising is completed, take the work out of the bowl. While the remaining on the metal pitch is still hot, wipe it off with a cloth or paper towel, and then heat the metal with a hot, blue flame until the pitch remnants burn and turn white. The heat will also anneal the metal which was hardened by the raising. When working on sterling silver, do not burn the pitch. Dissolve it with lacquer thinner and coat the silver with flux before annealing, to prevent fire scale.

If you are satisfied with the raised image, prepare the work for the **final chasing**. It is now critical to fill up the depressions on the back of the piece with pitch for support during chasing. Place a small amount of pitch into the depressions and heat with the torch or heat gun until the pitch melts completely. Tap the metal gently to let the air out of the pitch and then let cool. Mount the work, face up on the bowl.

The final chasing is the most important and exiting part of the work. Everything we have done so far is only a preparation for this final stage in the execution of the repoussé design.

Begin with re-chasing the outlines of the design. This time use the set of heavy, blunt liners and the light weight hammer. Those liners, which are not as sharp as the fine ones, displace metal fast without further thinning and cutting it. They will define the design and raise the relief even higher.

From now on any shape and size chasing tools can be utilized. Use all your skills, talent and imagination. Put you heart into the work and create the most beautiful piece of art by shaping, planishing and texturing the metal.

There are several important art canons, or rules we must follow while designing and executing our project. They are all about creating contrasts within the work, and if you apply them promptly, the artistic value of your work will increase

dramatically. Create a contrast between high and low relief, contrast between wide and heavy, and narrow, tapering details, between deep and shallow lines, planished and unfinished surfaces, different textures, even between the contrasting colors offered by the patina.

When your work has been completed, remove the metal from the pitch, clean with lacquer thinner and use as part of a necklace, maybe a broach a belt buckle, picture frame, or a box lid. Chasing and repoussé can be applied to any kind and style of jewelry or hollow ware, from small rings to large vessels, trophies, wall panels, even furniture. Interior designers are yet to discover the beauty and the endless possibilities offered by using hand made accessories, decorated with chasing or repoussé.

Another important application of the technique is **chasing over cast pieces**, mostly solid silver or bronze sculptures. Casting reduces the sharpness of the original image. Important details such as the texture characteristics representing different materials and surfaces are often completely lost. Chasing is the only way to restore those characteristics and bring the cast image as close as possible to the original model. The tools used on castings are usually larger and harder than the regular chasing tools. A high level of expertise is necessary for this type of chasing.

As with any jewelry and metalsmithing technique, safety in chasing should always be taken under consideration. Follow these few simple rules to prevent doing any harm to your hands and body. Remember that if practiced properly, chasing is completely safe.

- Always wear eye protection while you chase. The back of the chasing tool gets hard from the constant hammering, and if a piece of the steel chips off, it could fly in any direction and at a great speed. Grind the back of the tools to remove the mushroom shape, caused by the hammering, as soon as it begins to split.

- Your grasp on the tool should not be too hard, for this may damage the joints in your fingers. For added comfort and safety wrap the tools with tape as described earlier.

- Give your hands a ten-minute break for each hour of intense chasing.

- Keep your back straight and both feet on the floor.

- Position the pitch bowl at chest level, not too high, not too low, to avoid having a pain in your shoulders, spine or neck. Once you find that perfect level, adjust the height of the bench, or the chair.

- Use adequate ventilation when melting and especially when burning the pitch off the metal. Use lacquer thinner outdoors only, if possible.

- Dip your fingers in water before handling hot pitch.

- Make sure you have plenty of light at the bench. Day light is preferable.

And the last but not least important rule: choose your instructor carefully. Taking one class or a workshop provides a basic knowledge of chasing and repoussé, but does not make anyone a teacher. Even the most enthusiastic student could be easily discouraged by an instructor's lack of professionalism or experience.

The information presented in this article is a tiny, little piece from the universe of knowledge, technical skills, tricks and tips, which we simply call Chasing and Repoussé. For many of us these techniques have become a life-long passion. Others are yet to discover the beauty, and the excitement of sculpting images directly in metal. One thing is for sure — without chasing and repoussé metalsmithing would never be complete.