know it would not do to pour zinc or lead on to zinc that was wet, and as it melts at 212 it is below the point of steam heat, therefore you can pour this molten metal on to the cold metal without generating steam. Now it would almost seem as if this could not be done without the adhesion of the two casts, and it is only by having the metal perfectly cold and wet that it can be accomplished. Now stir the metal (I use a ladle of cast iron, perhaps not as thick as a plumber's ladle, but thick enough to retain the heat sufficiently to keep it liquid so that you can stir until it is almost granular) until it begins to thicken up, and that is the point where it should be poured, if you want to produce a cast without having the two adhere or fuse together. If you are very careful, you will produce a die and counter-die from the same model without any difficulty. Still, if you stick the first one, and have been careful in removing the die from the moldine, you can cast a number without any trouble. If the cast sticks, the die and counter-die stick together, you can make another without taking a second impression, or it is very easy to smooth off the moldine and take another impression if you should make a miss.

To obviate the necessity of making a counter-die, about two or three years ago something came to me which I think is a great saving of time. Soft pine cut into little blocks are very convenient for use instead of a counter-die held endwise of the wood over the metal, first laying the piece of the gold over the face of the die. One blow of a good heavy hammer, perhaps three times the weight of an ordinary claw hammer, on this wood will serve as a counterdie. You can get perfect swaging with the wood, as perfect, I think, as a counter-die, and you save fusible metal adhering to the gold. If any fusible metal adheres to the gold you must be very careful to remove it with pumice-stone or in some other way. If you do not, in heating, it will unite with the gold and destroy its usefulness because it is composed of tin, lead and bismuth, and great care must be used. The wood shortens the process one half. Having swaged the gold for the cap, the next thing to do is to try it on to the gold band which holds the fusible metal cusps to see that it fits perfectly, putting it on where it belongs, then mark it. Now take the gold band containing the fusible metal, put it into a big tablespoon and boil the fusible metal out. It will melt in boiling water sufficiently to permit you to scrape out every particle. If you have put the cap you have swaged on you will find it fits. Now put it into the soldering pliers and tack it or unite it at some one point. After that, if you feel it is necessary, fill it with investment material and complete the soldering. In my own office, with skilful manipulating of the blow-pipe, I can complete the soldering by laying it without investing it in one of the corrugations of the pad (using the mouth blow-pipe). Cut

398