Beginner's Corner

The Working Die

By **John A. Wexler, NLG**

The final step in the die production process is the working die. We have seen that the entire process starts with a galvano, a model anywhere from 12 to 15 inches in diameter. The design on the galvano is transferred in the Janvier Reduction Lathe to the face of a steel rod. The face of that steel rod is the same size as the coins that will be produced. This steel rod becomes a master hub.

We have also seen that there can be slips in the design transfer process which will lead to doubling on the Master Hub and that this doubling will affect coins over a period of several years. The Master Hub is then used in a hubbing press to make a Master Die for a given year. Prior to 1997, it required multiple hubbings in the hubbing press to produce a satisfactory image on a master die. If there was any misalignment between the images on the Master Hub and images already on the Master Die when another hubbing was made, doubling resulted on the Master Die. This doubling would then be found on all coins of that denomination for that given year.

Assuming we have a normal master die, the master die was then used in the hubbing press to make Working Hubs. Again, multiple hubbings were needed prior to 1997 and once again any misalignment of images between the Master Die and the Working Hub would produce doubling. This doubling would then be transferred to possibly hundreds of working dies for that year. The result would be doubling that is fairly common but not on all coins of that denomination produced that year. Some collectors still value these and try to assemble collections of as many different working dies affected as possible.

Once we have satisfactory working hubs, it is time to produce the Working Die. The working dies are the workhorse in coin production. They are installed in the coining presses and do the actual striking of the coins.

The Working Die is produced in the exact same manner as the Master Die and the Working Hub. A working hub is installed in the hubbing press with a steel blank inserted directly below. Several hundred tons of pressure forces the working hub into the face of the blank steel bar. As the pressure is applied, the steel in the blank rod begins to harden very quickly.

With just a partial impression made, the steel rod was be removed from the hubbing press, taken to the annealing ovens where it is heated to soften the metal once again, and then it is returned to the hubbing press to receive another impression. As before, if there is any misalignment between the images on the working hub and those on the incomplete working die, doubling will occur in the area of the misalignment when the next impression is made.

There are several factors that can cause a misalignment of images between the hub and the die. Each of these factors has become one of the "classes" of doubled die doubling. We will begin to explore these various classes of doubled die doubling in the coming installments of this column.

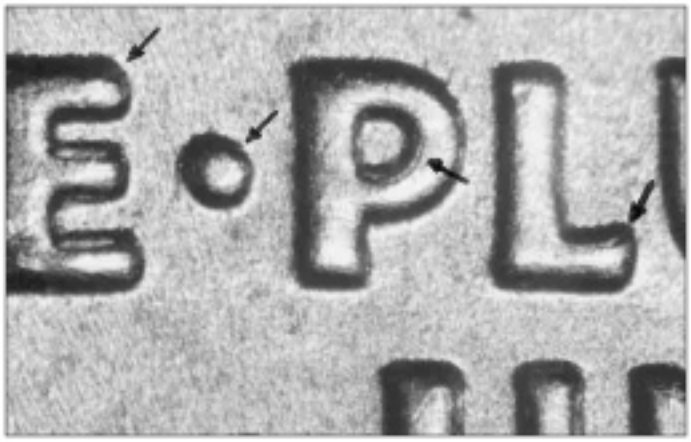
As we have noted before, in late 1996 and early 1997 the Mints began to install single-squeeze hubbing presses. They were installed first in the new die making shop at the Denver Mint and then shortly thereafter at the Philadelphia Mint. With these new hubbing presses the mints were able to produce finished master dies, working hubs, and working dies with just a single hubbing.

Since doubled dies occurred when there was a misalignment of images between the hub and the die in the multiple hubbing process, the possibility of doubled dies being produced was cut to nearly zero. This means that for coinage produced after 1997, it is highly unlikely that the doubling found on a coin will be the result of a doubled die. There are other factors that produce some fairly common forms of doubling on coins which most serious doubled die collectors view as worthless forms of doubling. Again, we will explore these other common forms of doubling in

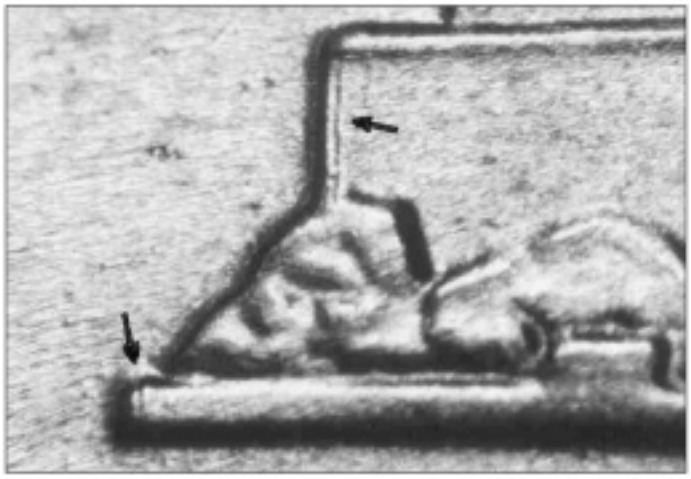
upcoming installments of this column.

You may notice that we did not say that it is impossible to find any doubled dies after 1997. In1999, variety collector **Russ LeBeau** found a 1998 Lincoln cent with a minor doubled die reverse. The Mint was adamant that all Lincoln cent dies that year were produced on single-squeeze hubbing presses, however, the evidence on the 1998 Lincoln cent indicated otherwise.

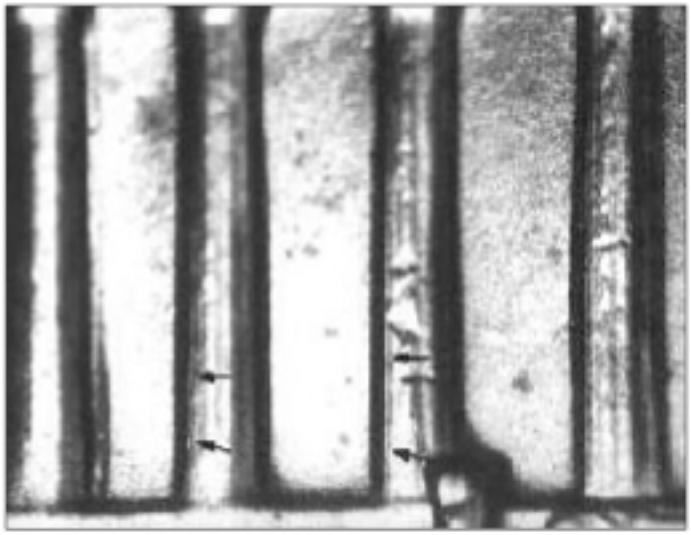
We suspect that with the initiation of the Statehood Quarter program the Mint had to use some of the old multiple-squeeze hubbing presses to keep up with the demand for working dies. This has not been confirmed but the doubling on the reverse of the 1998 cent clearly shows that a multiple-squeeze hubbing press was used for at least that one die. We can't imagine that it would have been placed into use for just a single die. No other doubled dies are known to exist for 1998 or any year thereafter.



Doubling shows on USA, ONE CENT, EPU, the dots, the designer's initials, the left side of the Memorial and the columns on the left of the reverse on this 1998 doubled die cent found by Russ LeBeau.



*This photo shows some of the doubling on the left side of the Memorial that can be seen on **1998 1c WDDR-001**.*



Doubling is definitely visible on the left sides of the Memorial columns on the left side of the reverse.

Look for these die gouges (dots) to help you verify that you have a specimen of 1998 1c WDDR-001. Also notice that doubling can be seen on the upper right O and N of ONE.