

The Electrocution of Topsy the Elephant and Restoration of Edison Diamond Discs

Thomas Edison was wrong quite a lot of the time. And he was occasionally stubbornly wrong. In the late 1880s, there was a rush to build power plants to provide the electricity needed for light bulbs that would soon be in every city, business and home. Edison owned the patents for DC power generators and was convinced that DC power was the way to go. His arch rival, Nikola Tesla, owned the patents for AC power generation techniques and advocated this as the standard for the new industry. The result has come to be known as the current wars.

And it was almost like a war. Both sides fought fiercely since the future of electric power was at stake. Tesla actually had the better argument for his AC system since its power was easily transmitted over even hundreds of miles, while Edison's DC system required that generators be fairly close to the customers. Tesla would win the day and it was he who set the US standard of 60Hz AC, but Edison didn't give up easily. He went on the offensive by claiming that AC was inherently more dangerous than DC and even filmed the electrocution of Topsy the Elephant (using AC power, of course) and showed the film for years to make his point. The electric chair was invented in Menlo Park but probably by some of his workers and not by Edison himself. Topsy the elephant was condemned because she had killed 3 workers and was quite an irritable elephant. The ASPCA approved of using AC current to kill her after she failed to eat a poisoned carrot. Edison even took to referring to being electrocuted as being "Westinghoused" after an early backer of Tesla.

Still, he lost the current wars. It's interesting to note, though, that Consolidated Edison continued to provide DC power to select places in New York until the end of 2005. They had 1600 DC customers left at that time.

But he wasn't only stubborn about electric power. He was also stubborn - and ended up being wrong - about recording music. In 1877 he invented and named the phonograph. His first machine used a needle connected to a sound horn to inscribe a tin foil sheet on a cylinder. Over time, his preferred method became the wax cylinder though other materials such as celluloid were also used. Most commercial cylinder production ended by 1929 long after the 78rpm disc became the winner of the music "format wars".

Edison knew that he was in danger of losing the music format wars and started work in 1911 on his own "improved" discs. The result was the Edison Diamond Discs. These were marketed as being able to be played without wear, would not warp and were sonically far superior to existing 78rpm discs. Diamond Discs used a diamond playback needle while 78rpm discs were designed to use a steel needle. Diamond Discs have a playback speed of 80rpm, weigh a full 10oz each and are ¼" thick. Even if you've never seen one, you'll not confuse them with normal 78rpm records.

Perhaps the most important difference in Diamond Discs is the way the audio information is recorded. With 78rpm discs, the needle inscribes the audio laterally; that is, by moving

left and right. Diamond Discs use a vertical cut or "hill and dale" method in which the needle inscribes the audio by moving up and down.

Millions of Diamond Discs have survived and can be enjoyed today. Their sound quality is actually very good and Edison even demonstrated this by having a live singer and a Diamond Disc recording of the same singer on a darkened stage. He then challenged the audience to tell which was which. This led to him calling his performances "recreations" and not recordings.

Diamond Discs were expensive at \$1-\$2.25 in the 1910s, but are affordable today with common ones costing a few dollars. Many people believe you need an Edison reproducer to play them (an expensive undertaking), but that is not true - you can play them perfectly well with your modern diamond tipped stylus and stereo cartridge. You can NOT play them with a vintage Victrola steel needle player - this will, in fact, damage the discs.

So, how do we play and restore Diamond Discs today? The answer is, like always, DC Six. Playing is easy, if you only have a handful of discs, you can use your normal LP needle and just play them. If you want better reproduction, you should buy a 3.7 Mill stylus to play these as the grooves are quite a bit wider than modern LPs .7 Mill or so. A modern 78rpm stylus is the 2nd best choice.

As to the speed, just record them at either 78rpm or you can also use 45rpm if that's all your turntable offers. Adjust the speed to 80rpm using the Speed Change function in DC Six.

Now for the fun part - you must make sure that your recordings of Diamond Discs done in DC Six are done in stereo. This makes it possible for us to extract the vertical signal components and hear the record as it should be heard. Once you have your stereo recording, just choose the File Conversion function from DC Six and convert from Stereo to Mono(L-R). This will give us the vertical component.

Now restoration can proceed as is normal with DC Six. Since each side of a Diamond Disc can hold up to 5 minutes of audio, you can get around 14 songs on a CD.

Diamond Discs are another example of Edison's desire to set a standard that ultimately failed. But the fact that we still have these discs and that we can fairly easily enjoy the music on them is something of a miracle in and of itself.