1. John Henry said to his Captain
   Dat a man ain't nothin' but a man.
   "Lawd, before I'd let a man beat me drivin' steel,
   I'm goin' die wid dis hammer in my hand, Lawd,
   Lawd, Lawd,
   Die wid dis hammer in my hand."

2. When John Henry was a little boy
   He sit down on his father's knee.
   He p'int his hand at a piece of steel,
   Said, "Dat goin' be the death of me, Lawd, Lawd,
   Lawd,
   Dat goin' to be the death of me."

3. John Henry said to his captain,
   "Captain, w'en you go to town,
   Won't you bring me back a nine-pound hammer, my
   captain?
   I'm goin' drive dis steel on down, Lawd, Lawd, Lawd,
   Drive dis steel on down."

4. John Henry went upon the mountain,
   Had a hundred and forty men.
   W'en de sun commence to shine and de steam fall
   down,
   Leave no one to drive but him, Lawd, Lawd, Lawd,
   No one to drive but him.

5. He said, "Weh get your shoes, little woman,
   And your dress all trimmed so fine?"
   "Lawd, I get my shoes from a railroad man,
   I get my dress from a driver in de mine, Lawd, Lawd,
   Lawd,
   Dress from a driver in de mine."

6 Said, "Weh you goin' now, little woman,
   Wid your dress all trimmed in red?"
   Said, "I'm goin' right down to the railroad track,
   Weh my husband John Henry fell dead, Lawd, Lawd,
   Lawd,
   My husband John Henry fell dead."

The musical transcriptions provided by Johnson are approximate and do not accurately reflect the complex vocal and rhythmic ornamentations employed by the singers, but the recording may be clear enough to permit more accurate transcriptions if anyone so desires.

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Retrieving the Orson Welles' Radio Broadcasts

Glenn Simonelli

Earlier this year, the Voyager Company released *Theatre of the Imagination: Radio Stories by Orson Welles and the Mercury Theatre*, a six-hour collection of Welles' radio work restored and issued on audio-only laser videodisc and audio cassettes. One of the first steps in the restoration process was taken at the Archives of Traditional Music: the digital remastering of Welles' acetate disc recordings of the live radio broadcasts. These discs, made by radio stations before the development of magnetic tape, are now in the collection of the Lilly Library at Indiana University.

Because the Archives was equipped to accommodate the physical characteristics of these recordings—78 RPM discs, many of them 16" in diameter and with unusually large grooves—we were enlisted to provide copies. There are very few high quality turntables available that can play 78 RPM discs, and turntables that can play 16" discs are even rarer.

The first step in dubbing the transcription discs was to determine the best size and shape of stylus for each disc. I had five different styli at my disposal for this project, ranging in size from 2.5 to 3.7 mil. Four of them were designed specifically to play old 78 RPM acetate transcription discs. Their shapes varied somewhat, but they were all truncated, that is, cut off at the tip so that instead of ending in a fine point, they were flat at the bottom. The reason for this is that by cutting off the tip, the stylus is kept from tracking the bottom of the record groove where most of the dirt and dust accumulate, and consequently, gives a quieter reproduction.

The fifth stylus was a fairly ordinary .7 mil elliptical, the kind used to play modern stereo LPs. While it was not designed to play discs like the ones we were dealing with here, it did come in handy on one occasion.

In determining the correct stylus for a particular disc, there were three criteria to be considered: tracking, distortion, and noise—in that order of importance. Tracking was fairly cut-and-dried. If a stylus was too wide to play a disc without skips or snags, it was rejected.

Distortion and noise were more subtle phenomena and had to be evaluated subjectively through trial and error. Often there was an inverse relationship between the two. One stylus might yield a relatively quiet but slightly distorted signal, while a different, usually smaller stylus would reproduce the signal more accurately, but with a higher level of background noise. When this was the case, the lack of distortion took precedence over the lack of noise, the assumption being that background hiss, pops, and crackles could always be filtered out later, but an inaccurately reproduced signal would be impossible to correct.

Once the stylus was selected, the rest of the process was uneventful in most cases. There was no attempt at re-equalization since that was being done at Sonic Solutions in San Francisco, using a state-of-the-art digital noise reduction process. Much of the time it was merely a matter of playing the discs, converting the signal to pulse code modulation, a form of digital encoding, and

recording the encoded signal onto the video portion of a Beta video tape. If you were to play the tapes on a Beta VCR, you could actually see the digital representation of these broadcasts on your television screen.

There were, however, some profound exceptions to this theoretically simple process. Many of these discs were glass based acetates: records made from a 1/8" or 3/16" thick sheet of glass coated with a thin layer of acetate into which the broadcast signal was cut. In some cases the discs were cracked or broken. One disc, for example, was broken in half. To record it, I taped the disc back together on one side, then carefully flipped the disc over and played the other side. After recording that side, I repeated the process to get a recording of the other side.

Another disc was also broken, but in a way that was to make it infinitely more difficult to copy. Usually, when a glass based disc breaks, the edge of the break is slightly irregular, so that the two halves fit together like two pieces of a puzzle. Unfortunately, this particular disc was not broken in half, but had a half-moon shaped chunk broken off of it. Because the edge of the break was curved and perfectly smooth, the two pieces never "locked" back into place the way they normally do—you could rotate the broken chunk inside the break. Therefore, in addition to taping the two pieces back together, it was necessary to match up the record grooves correctly. If you have ever looked at the grooves in a record, you can probably appreciate the nature of this problem. Any slight misalignment of the grooves would cause the needle to skip, snag, or bounce out of the groove. This necessitated a long, arduous, trial-and-error process of taping the two parts of the disc together, flipping it over and playing the other side, then going back and adjusting and retaping it, over and over again, until finally, the grooves were perfectly aligned and could be played without any skips.

After several hours of attempts, I finally managed to fix the break so that the disc could be played, but there was still a very loud "pop" every time the needle passed over the edges of the breaks. This was because of a minute gap between the two edges. As the needle passed over the gap, gravity caused it to drop slightly, forcing the needle to bang its way back up over the edge of the next piece. The solution was to stuff a little piece of paper under each of the trailing edges and raise them up just enough to keep the stylus from falling into the gaps. Unfortunately, doing this caused the grooves to misalign, so I had to repeat the taping-flipping-playing routine, this time with an additional paper-stuffing step, until the grooves were properly realigned. It took an entire afternoon, but eventually it was possible to get a complete recording.

Another interesting problem concerns the selection, "Ladies & Gentlemen, There's a Full Moon Tonight." The majority of the piece played fine, but one of the key moments, when Orson Welles says that no one knows "whether the earth is young or old," was horribly distorted, almost to the point of inaudibility. Close examination revealed that most of the acetate coating had been scratched right off the disc at that point. (Acetate is very soft and is easily eaten away by a badly worn stylus or an overly heavy tonearm.) The solution was to record

Orson Welles on the air.

the piece twice, the first time using a 2.5 mil truncated elliptical stylus. This yielded the best sound for the majority of the cut, but still left the one bad spot. The disc was then recorded a second time using the .7 mil contemporary stylus mentioned earlier. Because the stylus was so much smaller and came to a sharp point, it tracked along the bottom of the groove. The overall sound was poor because of the accumulated dirt and grime down in there, but at the one bad spot, there was still enough modulation at the bottom of the groove to reproduce the phrase well enough to be understood. It was left to the wizards in San Francisco to edit the two versions together. Apparently, that is exactly what they did. If you listen to the selection carefully, you can hear a slight difference in sound quality when Welles says "whether the earth is young or old." The difference is caused by the two styli tracking different portions of the record groove.

That more or less highlights the Archives' contribution to the project. The next step was to clean up and re-equalize the recorded signal, which was done at Sonic Solutions. The final product represents an ironic combination of the latest computerized audio processing and such crude, primitive methods as stuffing little pieces of paper under a disc or taping a disc back together.

Theatre of the Imagination: Radio Stories by Orson Welles and the Mercury Theatre, is under accession number 89-033-C at the Archives of Traditional Music. Order information is available from Aleen Stein at the Voyager Company (213—451-1383).

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