THE REPRODUCTION OF CYLINDER RECORDINGS

George List

(Continued from the last issue)

The development of the vacuum tube by Lee De-Forest in 1907 permitted the radio broadcast of actual sound rather than telegraphic code. By 1927 the combination of telephone transmission methods and electrical amplification of sound had produced the electronic recording process.

These methods were soon applied to the reproduction of cylinders, both in the United States and abroad. In the early thirties Lincoln Thompson of the Sound Specialties Company of Waterbury, Connecticut, developed for the use of Helen Roberts at Yale University (Helen H. Roberts, "The Re-Recording of Wax Cylinders," Zeitschrift für vergleichende Musikwissenschaft, III, 1935, 75-83) electronic equipment for copying wax cylinders on aluminum disks. Thompson replaced the original heads of two spring-wound cylinder players with reproducers based on the piezo-electrical effect, commonly known as crystal pick-ups. The signal thus created was fed through a high gain power amplifier, which permitted increase or diminution of volume, and through high and low frequency cut-off filters, which permitted the diminution or removal of excess noise or rumble at either end of the frequency spectrum.

New problems had by this time arisen which required solution. Unlike disk recordings, in which the stylus is guided in its path by the laterally cut grooves themselves, the stylus resting upon the wax cylinder must be pulled across the cylinder by a feed bar or screw. Three pitches (ratios of grooves per inch) are in use in cutting disks—standard, transcription, and microgroove—but the same pickup arm can be used for any of the three. However, to play back cylinders at different pitches, the proper feed bar must be used for each or the recording will be ruined. Four different pitches were used during the history of the industry. All four inch cylinders were cut at 100 lines per inch with the exception of the microgroove cylinders introduced just before the turn to disk recordings which were cut at 200 lines per inch. The six inch cylinders used with the later manufactured office dictaphone machines were cut at 150 and 160 lines per inch, respectively, for the Ediphone and the Dictaphone. In order to accommodate these different pitches Miss Robert's laboratory was equipped with an Edison player of a compound type that could be adjusted to play 100 or 200 lines per inch and a Dictaphone remaining at its normal adjustment of 160 lines per inch. The reproducer of the latter was apparently sufficiently flexible to play back without harm recordings cut at 160 lines per inch.

Similar equipment was constructed at about the same time by Walter Schur in Germany for use in the laboratory of Robert Lachmann in the Archive of Oriental Music in the Hebrew University of Jerusalem. This apparatus also included means for filtering excess noise.

Equipment of somewhat the same nature but of more advanced design was also constructed by Lincoln Thompson in the early forties for the use of George Herzog in the Archives of Folk and Primitive Music. At that time the Archives was located at Columbia University. In this setup only one cylinder player was used. Its mechanical parts were operated electrically and it was equipped with several sets of feed screws and cogs which, when organized in proper ratios, permitted the playback of cylinders cut at all four pitches. The six inch cylinders manufactured for use with the office dictating machines have a slightly larger bore than the older four inch cylinders. Herzog's cylinder playback was supplied with a combinational mandrel (holder upon which the cylinder is placed) manufactured by Edison which accepted cylinders of both sizes.

In the Archives of Folk and Primitive Music at Indiana University cylinder reproduction is on magnetic recording tape only. The Archives is equipped with three of the latest models manufactured of office dictating machines re-built at the respective factories. The accompanying photograph shows two of these cylinder players. Both are still equipped with their original feed bars. The Dictaphone plays cylinders cut at 160 lines per inch, the Ediphone those cut at 150 lines per inch. A third player, an Ediphone (not shown), is equipped with a feed bar for playing cylinders cut at 100 lines per inch and, through the use of an additional cog, those cut at 200 lines per inch. The Dictaphone's original equipment includes a mandrel with projecting flanges activated by springs which holds securely cylinders of either length or bore. Similar mandrels have been placed on the Ediphones.

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