Telephony 101 – Combined Telephones of the 1930s and 1940s January 19, 2013

Hello All,

As always, please send any questions about the reading assignment directly to me at oldtimetelephones@goeaston.net. I will bundle questions if necessary, repeat the questions, and give answers in an e-mail to the TCI List Server before moving on to the next reading assignment. This way everyone will benefit from these questions and answers. By sending questions directly to me, we will avoid unnecessary clutter on the List Server. Previous reading assignments, notes, questions, and answers are available in the TCI Library at http://www.telephonecollectors.info/telephony-101/.

Please read Chapter 13, Combined Telephones of the 1930s and 1940s, on pages 77-85.

Personal tastes vary, but my all-time favorite artistic telephone design is the Western Electric D-type handset desk stand (Chapter 11), which does not appear to be credited to any particular designer. Nevertheless, telephone designers entered the scene after the desk-stand period ended – in the art-deco period of the combined telephones. The famous designer, Henry Dreyfuss, started his long-term association with the Bell System in 1930, and his firm stayed with the Bell until the very end in 1984.

Although I don't think of the WE 302 as a beautiful telephone, its design was very practical and has been featured recently on a U.S. postage stamp. I provided the USPS with the WE 302 that was photographed for this stamp, and I wrote an article about it in the TCI newsletter in July 2011. A copy of that article will be included in the TCI Library along with the Telephony 101 notes.

This whole chapter is interesting to read (IMHO), and the first two pages give some indication of the tremendous amount of research and attention to details at the Bell Laboratories. To fully appreciate the clever change in ringer design, you have to remember the basics of coils and condensers. The voltage is out of phase with the current in both of these components – that is the ac voltage does not go up and down in sync with the ac current. One of them leads the current by 90 degrees and the other lags the current by 90 degrees (I can never remember which is which). Thus the voltage across the condenser is at its positive maximum when the voltage across the coil is at its negative maximum (i.e., its minimum). They are 180 degrees out of phase and tend to subtract from each other. Consequently, the voltage across the two of them together is relatively small, and the ac impedance across the ringer's coil and condenser combination is thus also relatively small. The combined impedance of the ringer and condenser in the WE 302 was in this manner designed to be about the same as the combined impedance of the ringer and condenser in earlier subsets with larger condensers and lower-resistance ringers. Cool!

There's a lot of detail buried in this short chapter about components in the various combined telephones. You can find information about all these components, including electrical properties, in other parts of the book by referring to the component's model number. By the way, there's a good index at the back of the book that will help you find things.

If there are any questions about the current reading assignment, we will deal with the questions before moving on to the next reading assignment.

Ralph