

THE  
**TELEPHONE**  
MUSEUM

**Basic Electronics and Telephony**  
**Lesson Three**

1. Turning mechanical energy (e.g. voice) into electrical energy
  - a. Berliner “loose-contact” telephone transmitter
  - b. Hughes carbon microphone
  - c. Lampblack carbon microphone
  - d. Dynamic microphone
2. Turning electrical energy back into mechanical energy
  - a. Demonstrate how a small speaker is constructed
    - i. Diaphragm
    - ii. Coil
    - iii. Magnet
  - b. Use an oscillator to move a speaker coil within its magnet assembly
  - c. Discuss dynamic speaker element in telephones
3. Transmitting and receiving sound
  - a. Simplex – signals pass in one direction only
  - b. Half-Duplex – signals pass in one direction, but may be reversed
  - c. Full-Duplex – signals pass in both directions