Crystal radios are often the first electronic project built at home or school. This project shows some of the principles we have studied, such as tuning and detection.

Commercial parts are used in this project. Its construction introduces more complex circuits. Being familiar with these parts will pay off in more advanced projects. The radio can be built on a plastic sheet or a wooden base. It will require a good antenna for proper operation.

Notes. The antenna coil consists of $L_1$ and $L_2$. It can be constructed from 10 feet of No. 30 AWG magnet wire. The wire is wound on four inches of 3/4 inch PVC. Use 30 turns for $L_1$. Use 70 turns for $L_2$.

If the variable capacitor is difficult to find, substitute a 360 pF fixed capacitor and vary the number of turns in $L_2$. Varying the number of turns in $L_2$ will change the resonant frequency in the tank circuit.

Parts List:
- $C_1$ – 360 pF variable capacitor
- $C_2$ – 47 pF capacitor, 50 V
- $R_1$ – 100 kΩ resistor, 1/4 W
- Germanium diode 1N34A
- Antenna wire (40 ft. of #22 conductor)
- Antenna coil
- Earphone