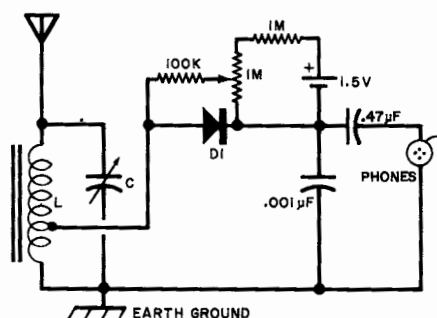


"SUPERHOT" CRYSTAL SET

Q. *I built a crystal set using a ferrite bar antenna, AM tuning capacitor, silicon diode, ceramic caps and crystal earphone. It works, but I can only pick up very close stations. Is there a way to increase the set's sensitivity?*

—Clare Linn, New Orleans, LA

A. The crystal set isn't very sensitive because you used a silicon-diode detector. For the diode to conduct, you have to exceed the barrier potential (0.7 V)—which only a very hefty signal could do. Germanium, with a barrier potential of 0.2 V, is a better choice. The circuit shown, though, is a rather unique crystal set using a silicon diode. Tuning is accomplished by var-



ying capacitor C . The ferrite loopstick, L , has a low-impedance tap. The 1-megohm potentiometer applies a bias voltage across the diode, ranging from 0 to 0.75 volt. Thus, the pot acts as a sensitivity control. At maximum sensitivity (0.7 V forward bias), very weak signals will be able to ride through the diode. When connected to a good antenna (a longwire or rotatable loop), this little set will deliver surprising performance. In operation, you will notice a point where advancing the sensitivity control causes the signal to drop out completely. This happens when the diode turns fully on. Back down slightly for best sensitivity. Use high-impedance crystal headphones or earphones, and an AA or C cell voltage source. The battery will last for a long, long time.