

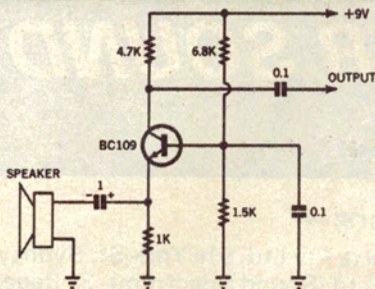
# Elementary Electronics: Ideas Worth Trying

## USING A SPEAKER AS A MICROPHONE

It is not generally realised that a permanent magnet, moving coil loud-speaker can be used as a microphone. In fact, because of their large cone area, "permag" speakers (as these type are called) are quite sensitive.

The sensitivity of the speaker when used as a microphone is proportional to the cone area. This means that, as the speaker becomes larger, it will become more sensitive. Despite this, even the small speakers which are used in portable transistor radios are quite sensitive, compared with many common microphones.

The usual order of speaker impedance is eight to fifteen ohms. Some go as low as two ohms — others to thirty or more. The output voltage is proportional to the impedance, so that a high impedance speaker will give a higher output voltage than a low impedance type.



However, even a high impedance speaker is unlikely to have enough output voltage to drive a normal preamplifier fully. One way to overcome this is to use a small speaker transformer "back to front". This may be one salvaged from an old transistor radio. The step up in turns ratio gives a corresponding increase in voltage.

Another approach would be to use the simple "grounded base" preamplifier stage which we have shown above.