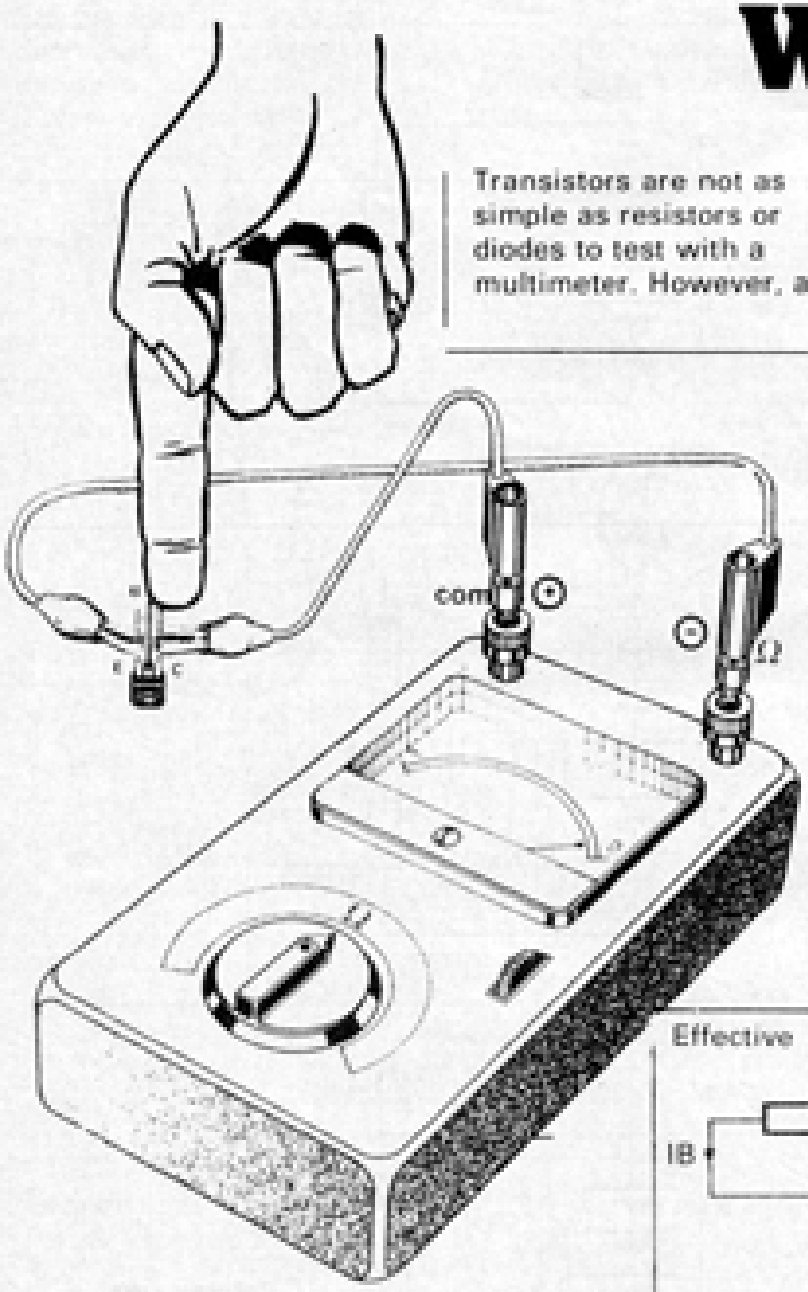
Wet-Finger-Test



Transistors are not as simple as resistors or diodes to test with a multimeter. However, a rough check is easily possible with what is called a 'Wet-Finger-Test'. The multimeter is kept in the Ohms range. It is connected to the emitter and collector. The 'COM' (common) terminal, which is generally the positive terminal, is connected to collector of NPN and emitter of PNP transistors. We have seen that a transistor is constructed by creating two diode junctions which are in opposite directions (the Base-Emitter junction and the Base-Collector junction). There can be no current from Collector to emitter or emitter to collector when the base is kept unconnected. The multimeter shows infinte resistance.

Now if we touch the base and collector terminals with a wet (moist) finger tip, a small current flows through the base which is amplified by the transistor and the amplified current flows through the collector. If the transistor under test is in good condition, this collector current is sufficient to deflect the multimeter needle. The current is supplied by the internal battery of the multimeter. The multimeter reads the resistance value on the scale which is roughly given as

$$R = \frac{V}{Ic}$$

V being the multimeters voltage available at the two leads, and IC is the colector current that flows through the transistor when we touch the base with a wet-finger.

Effective resistance of the Wet-Finger