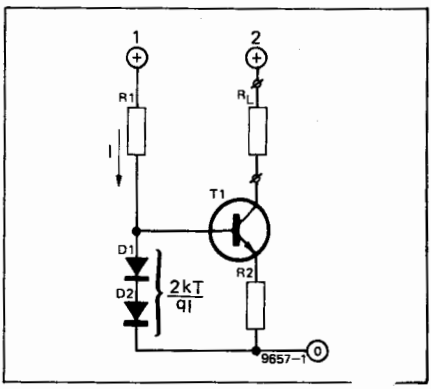
improved current source

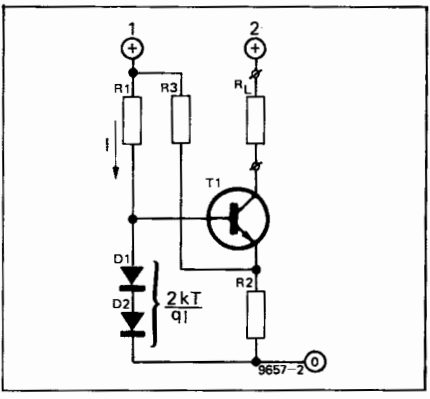
The basic circuit of a current source is shown in figure 1. The base-to-emitter potential for the source transistor T1 is derived from the '+1' power supply terminal through the



potential divider R1, D1, D2. The T1 collector current is approximately

$$\frac{600 \ldots 700}{R_2} \text{ milliamps}$$

where R2 is in ohms.
Minor fluctuations in the '+1' voltages affect the T1 collector current via the differential resistance of D1 and D2. This can, of course, be prevented by using a zener diode to stabilise the '+1' voltage.
An alternative method is to add a resistor R3 from the '+1' terminal to the



T1 emitter, as shown in figure 2. If R3 is chosen so that

$$\frac{R_3}{R_2} = 20 \times V$$

where V is the voltage '+1', the T1 collector current will remain constant in spite of supply voltage fluctuations.