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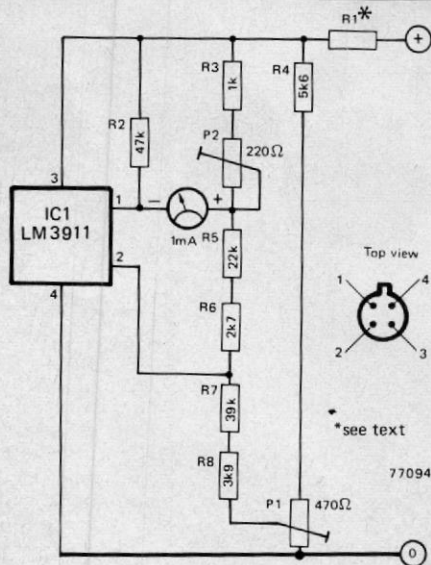
room  
thermometer

Using a National LM3911 IC, a 1 mA meter and a few resistors it is a simple matter to construct a thermometer to measure over the temperature range  $-20^{\circ}$  to  $+50^{\circ}\text{C}$ , which should be adequate for all but polar climates! As the circuit is intended as a room thermometer the entire circuit operates at the temperature which is being measured, so the resistors used should be low-temperature coefficient types to maintain the accuracy of the circuit.

To calibrate the thermometer the meter scale must first be marked out linearly from zero =  $-20^{\circ}$  to full-scale =  $+50^{\circ}$ . With P2 set to its mid-position the circuit should be placed in a freezer or the freezing compartment of a refrigerator set to  $-20^{\circ}\text{C}$  and P1 should be adjusted until the meter reads  $-20$ . The circuit should then be placed in a temperature of  $+50^{\circ}\text{C}$  and P2 adjusted until the meter reads 50. Of course it is also possible to mark out the scale from  $0^{\circ}\text{F}$  to  $120^{\circ}\text{F}$  and calibrate zero and full-scale accordingly.

P1 and P2 interact to a small extent, so it may be necessary to repeat the procedure several times until both the  $-20$  and  $+50$  readings are accurate.

As the IC contains its own stabiliser the



supply voltage is not critical provided the value of R1 is chosen so that about 3 mA flows through it. The value of R1 is given by

$$R1 = \frac{V_b - 6}{3} \text{ (k}\Omega\text{)}.$$