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room thermometer

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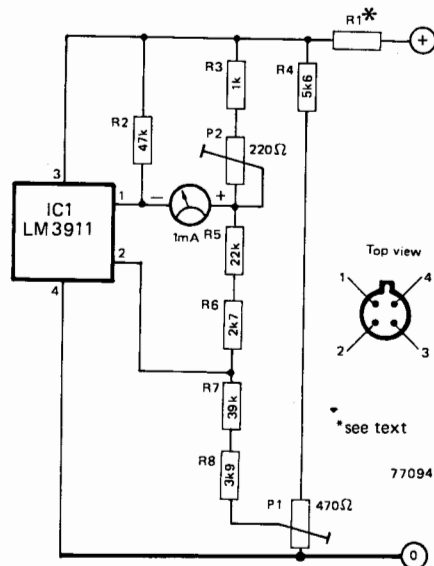
is doubled, i.e. increased by 0.02. This may

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° 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° 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°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°F to 120°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

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