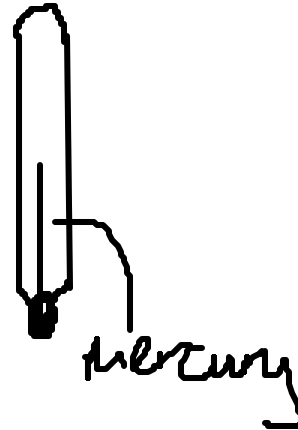


Measuring Temperature

Dr K M Hock

thermometer:

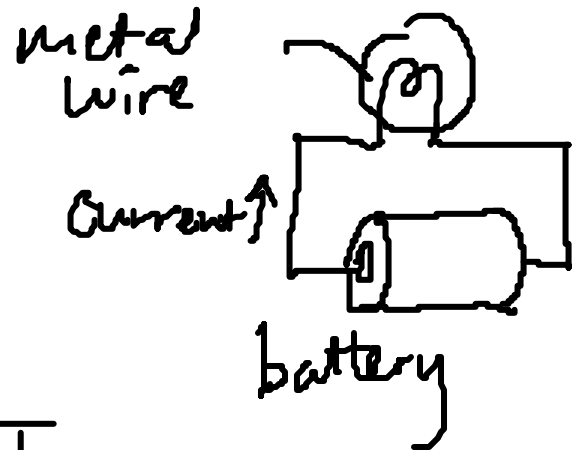
how does it work?



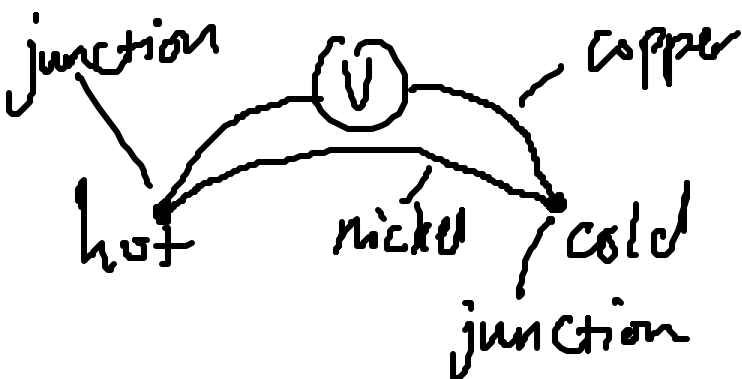
- liquid expands when heated
- Volume moves up narrow tube
- put marks on tube to read T.

e.g. resistance of metal ↑ when hot.

Electric Current ↓
↳ can use to find T.



e.g. thermocouple



- 2 wires of different metals
- T difference at junctions ↑ V ↑
find T ↙ ↘

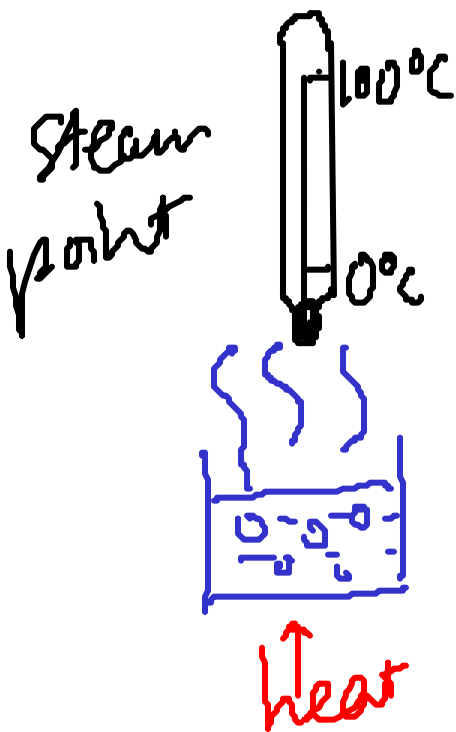
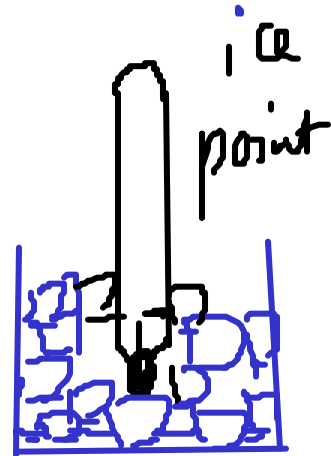
Fixed Points

Dr K M Hock

How did the maker know where to put the markings for 0°C , 10°C , 20°C , ... ?

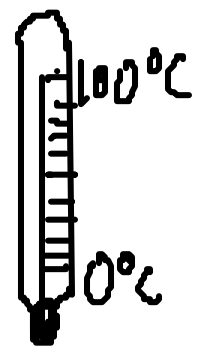


Put it in melting ice and mark for 0°C .



Then put in steam and mark for 100°C

Then put 99 marks in between to give Celsius scale.

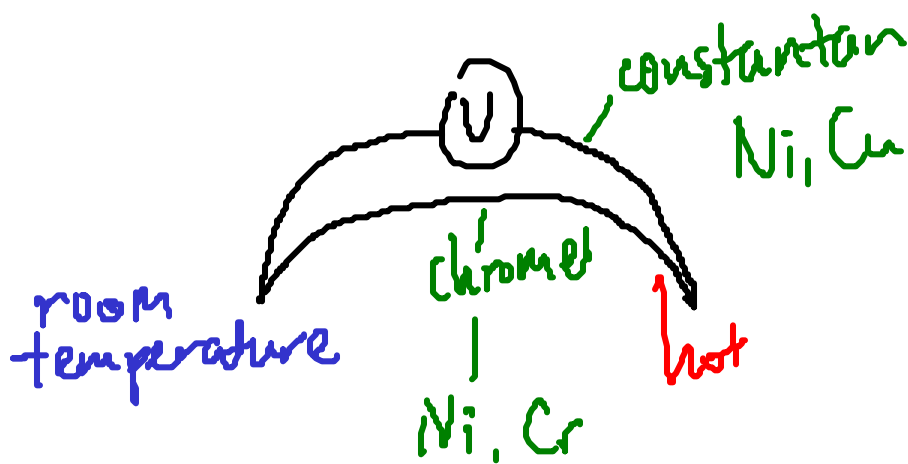


ice point, 0°C
Steam point, 100°C } fixed points.

discuss the action of a thermocouple thermometer, showing an understanding of its use for measuring high temperatures and temperatures which vary rapidly

Thermocouple

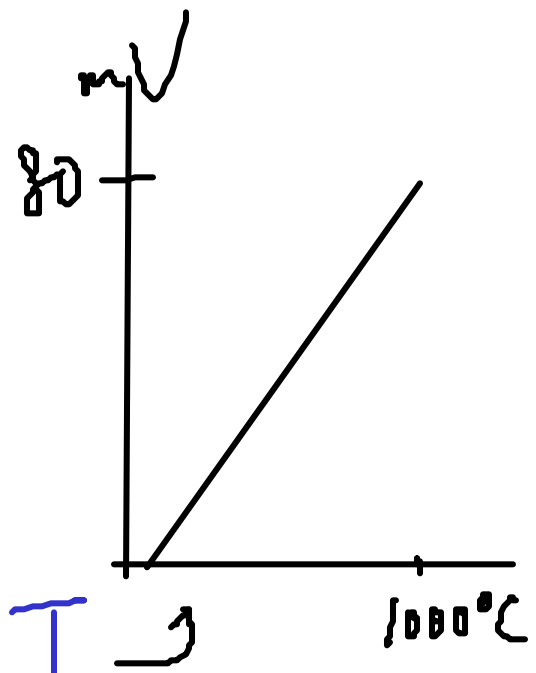
Dr K M Hock



- Wires of 2 metals joined
- T difference at junctions \rightarrow Voltage

To measure T :

- leave 1 junction at room T
- put other junction in hot place - up to 1000°C
- Voltage produced tells T



Compare with Mercury in Glass -

1. measures much higher T
2. responds much quicker
 - just warm small junction
 - not all mercury in bulb.