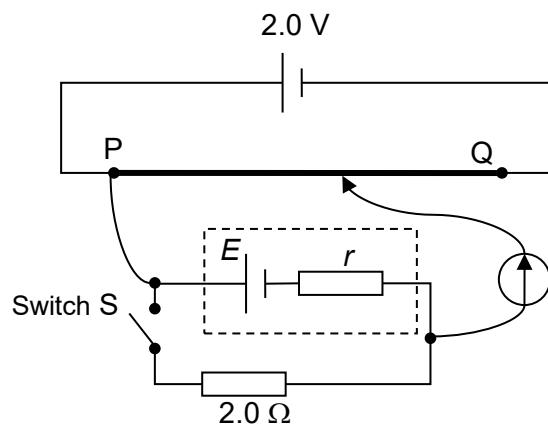


- 20 The diagram below shows a potentiometer circuit used to determine the internal resistance  $r$  of a cell of e.m.f.  $E$ . The driver cell has an e.m.f. of 2.0 V with negligible internal resistance and the resistance wire PQ is 1.0 m long. The cell is connected in parallel with a resistor of  $2.0 \Omega$ . When the switch is open, the balance length is 0.70 m and when the switch is closed, the balance length is 0.50 m.

What is the value of  $r$ ?



- A  $0.15 \Omega$       B  $0.40 \Omega$       C  $0.50 \Omega$       D  $0.80 \Omega$