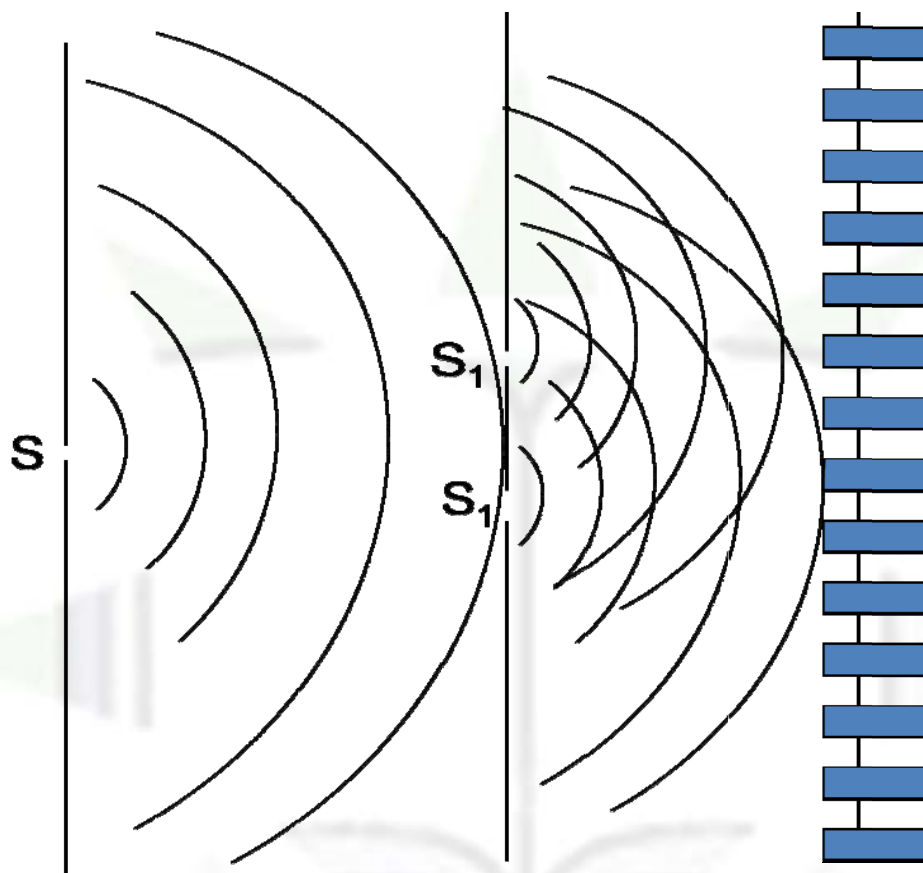# Interference

Definition: The modification in the intensity distribution due to the superposition of two or more coherent wave is known as Interference. On the screen we get alternative bright and dark region known as interference of fringes.

Young's experiment: This was the first experimental evidence in support of interference.

S1S2 = distance between the pin holes on the second board. It is small of the order of millimeter. On the screen we get alternative bright and dark fringes.

How to produce coherent source: Two independent sources such as two bulbs or two candles or two lamps can never be coherent source. Coherent sources are always produced from a single source in two different ways.

(1) By division of wave front: We know any point laying on the wave front act as secondary coherent sources. We have to expose only two such points blocking all other points as done in Young's experiment.

(2) By division of amplitude: We know that intensity of light is proportional to square of the amplitude.

At Q, a part of the incident intensity is reflected and rest is transmitted by division of amplitude similar divisions of amplitude take place at points S, Q_1, S1, Q2... as a result we get a series of reflected rays QR, Q1R1, Q2R2.... And series of transmitted rays ST, S1T1, S2T2....
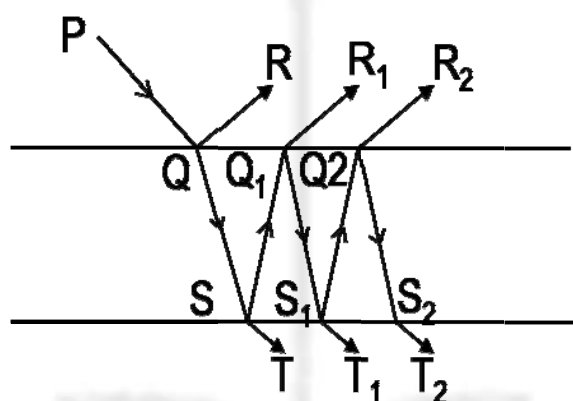
If we consider any two members in a particular series say QR and Q_1R_1 since they are obtained from the single ray PQ hence they are coherent and produces interference fringes where reunite. This is cause of colour of thin film.