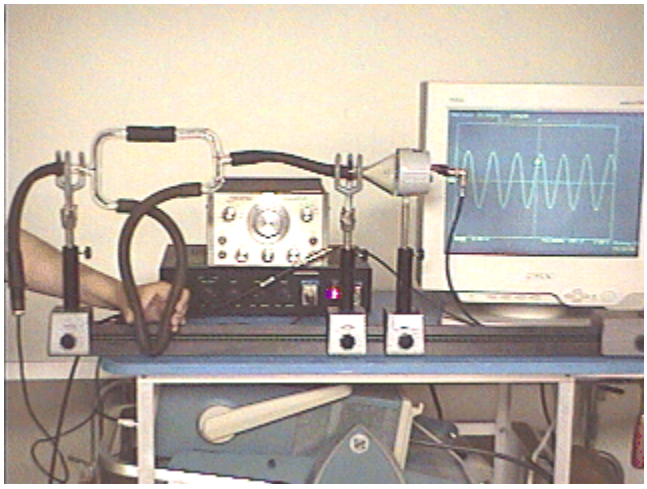
Answer #142

The answer is (b): the amplitude of the sound will become less, as can be seen in an mpeg video by clicking your mouse on the photograph below.



The frequency of the sound used is about 345 Hertz, and the speed of sound in air at room temperature is about 345 m/s, so the wavelength, the speed of sound divided by the frequency, is about 1 meter. The length of the extra tube is about one-half wavelength, so whatever sound goes down the longer tube will be out of phase with the sound going through the shorter tube when they are recombined. Therefore, the waves from the two paths will interfere destructively, causing the amplitude to decrease. This device is called *Quincke's tubes*.

Archive 8

Question of the Week

Outreach Index Page

Lecture-Demonstration Home Page

For questions and comments regarding the *Question of the Week* contact
Dr. Richard E. Berg by e-mail or using phone number or regular mail address
given on the Lecture-Demonstration Home Page.