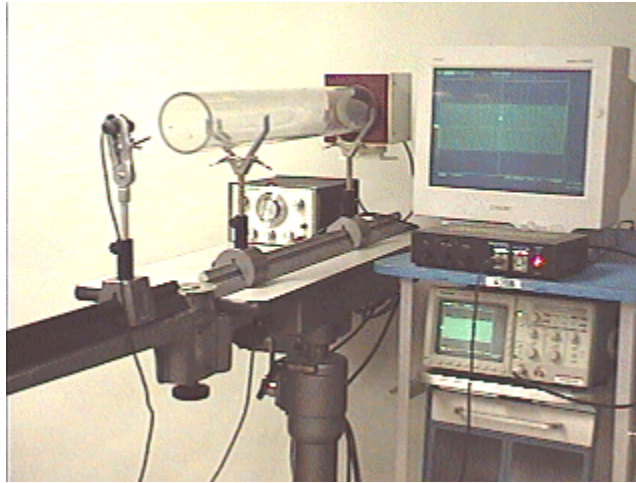


Answer #143

The answer is (b): a 4000 Hertz sound wave diffracts much less than a 400 Hertz sound wave, as can be seen in an mpeg video by clicking your mouse on the photograph below. NOTE: The sound that you hear on the video is picked up by the microphone on the video camera, not by the moving microphone, so it will remain constant in volume during the video.



Sound has the interesting property (as do other types of waves) that low frequencies are much more able than high frequencies to bend around corners, spread out after passing through doors, and bend over barriers. This has a number of consequences such as the "muffling" of sound heard from the next room or hearing the tubas before the piccolos as a marching band approaches from around the corner of a large building. Diffraction also limits the usefulness of roadside sound barriers, because the predominant road noise is at relatively low frequencies and readily diffracts over the barrier back to the ground.

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