Chapter 20: Sound

5) Why do flying bees buzz?

12) In Olympic competition, a microphone detects the sound of the starter's gun and sends it electrically to speakers at every runner's starting block. Why?

15) Why is it so quiet after a snowfall?

21) Why does sound travel slower in cold air?

29) What two physics mistakes occur in a science fiction movie that shows a distant explosion in outer space, where you see and hear the explosion at the same time?

37) The sitar, an Indian musical instrument, has a set of strings that vibrate and produce music, even though they are never plucked by the player. These “sympathetic strings” are identical to the plucked strings and are mounted below them. What is your explanation?

40) A special device can transmit sound out of phase from a noisy jackhammer to its operator using earphones. Over the noise of the jackhammer, the operator can easily hear your voice while you are unable to hear his. Explain.

48) Suppose a piano tuner hears 3 beats per second when listening to the combined sound from his tuning fork and the piano note being tuned. After slightly tightening the string, 5 beats per second are heard. Should the string be loosened or tightened?