Proceedings of the Iowa Academy of Science

Volume 26 | Annual Issue Article 54

1919

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G. W. Stewart
State University of Iowa

a direction depending upon the slopes of the attachment and the horn.

6. The end correction of the conical horn in these experiments is shown to be approximately 0.7 times the radius.

PHYSICAL LABORATORY,
STATE UNIVERSITY OF IOWA.

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ABSTRACT

The binaural difference of phase effect has become of increased importance in recent years. The following are the new facts obtained in recent experiments which are still in progress:

1. For a frequency of 130 d. v. the ratio between the phase and the apparent displacement from the median plane is approximately unity. The ratio will be called the "displacement ratio."

2. This "displacement ratio" is not the same for frequencies from 50 to 1,300 d. v. Present experiments indicate that this "displacement ratio" can be expressed approximately in the following equation:

$$\text{Ratio} = 0.5 + 0.0037 \times \text{frequency}.$$

3. This equation shows that the sensitivity of the ears as expressed by displacement is not strictly a time effect nor is it strictly a phase difference effect. At the lowest frequencies mentioned the change in displacement ratio is so slow as to indicate that, approximately, the displacement depends only on the phase and is independent of frequency. But in the higher frequencies from 500 to 1,000 the displacement is approximately inversely proportional to the frequency. This would represent equal sensitivity in equal difference in time of arrival of the waves.

4. When the sound listened to binaurally is complex, the tones in the lower range will have a different displacement. This has been verified and in addition it is found that the presence of an overtone tends to decrease the sensitivity for the fundamental. It is also found that if the overtone is faint enough, both tones are displaced together in accord with the displacement of the fundamental. In a similar manner if the fundamental is sufficiently faint, the displacement of the entire tone is that of the overtone.

PHYSICAL LABORATORY,
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