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The Action of Cylindrical Tubes in Branch Acoustic Lines

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THE ACTION OF CYLINDRICAL TUBES IN BRANCH ACOUSTIC LINES

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(ABSTRACT)

Quincke's tube has long been known. A theoretical and experimental study of its action is herewith reported. Also the formulas for an open tube as well as a closed tube have been derived. The experimental results show unmistakable evidence of the viscosity. The selective property of Quincke's tube is ascertained both experimentally and theoretically for the first time.

STATE UNIVERSITY OF IOWA.

THE POSITION OF THE VIBRATING SOURCE IN THE KUNDT'S TUBE EXPERIMENT

G. W. STEWART

(ABSTRACT)

Various textbooks are not in agreement as to whether the vibrating piston is at a node or "near a node." The theory shows that it is strictly at a node. The misstatement in regard to the location of the piston has probably been caused by a misunderstanding of the word "node." The piston is one-half wave-length from the nearest node and yet it is strictly not a point of rest.

STATE UNIVERSITY OF IOWA

THE ACTION OF AN ORIFICE IN AN ACOUSTIC CONDUIT AND A MEANS OF DETERMINING THE EFFECT OF VISCOSITY

G. W. STEWART

It was shown in a previous communication that the transmission through an acoustic conduit could be computed if the components of the impedance of the branch line were known. In the case of the orifice when viscosity is considered the following are the values of the two components:

$$Z=\varrho k^2 a/2\Pi+(2\omega\varrho\mu)^{\frac{1}{2}}(\Pi R^3)^{-1}L,$$
$$Z=\varrho\omega/c\quad+(2\omega\varrho\mu)^{\frac{1}{2}}(\Pi R^3)^{-1}L.$$

An experimental and theoretical study has been made of orifices