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## Mean Free Path of Gases by a Direct Method

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about 430 meters per second at 26°C. For ether vapor the value is 195 meters per second at 23°C. These values are about five per cent higher than the values given in the International Critical Tables.

By using the velocity formula we get 428 meters per second for

$$v = \sqrt{\frac{\alpha p}{d}}$$

the velocity in water vapor at 25°C ( $V=1.321$ ), a value which is in satisfactory agreement with the experimental value. For ether vapor at 35°C ( $V=1.093$ ) the formula gives 199 meters per second which agrees within the limits of experimental error with the experimental result after correction is made for the difference of temperature.

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## MEAN FREE PATH OF GASES BY A DIRECT METHOD

JOHN A. ELDRIDGE

Apparatus consists of a brass tube partitioned into chambers. Partitions contain small holes which are exactly aligned. Gas is introduced at a pressure of several millimeters at one end; a vacuum is maintained in other chambers by rapid pumping and the molecular beam passing through the aligned holes is measured by impact upon a vane suspended from a quartz fiber. Introduction of a gas in one of intermediate chambers deflects away a definite proportion of the beam giving a direct measure of the mean free path.

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## THE EARTH AS A SOURCE OF HEAT FOR OUT-BUILDINGS

L. V. CRUM

The object of this experiment was to investigate the possibilities of utilizing the earth's heat near the surface to warm chicken houses, garages, and other out-buildings during extremely cold weather.

A section of water radiator was buried in a trench seven feet deep which was dug in the dirt floor of a henhouse. Directly above