FIG. 1.

The mouse chamber itself contains mineral oil enough to cover the feces, which rest on the lower mesh platform. The urine falls to the neck of the chamber and can be drawn off by the stopcock, free of oil. A coarser mesh platform supports the mouse at a level high enough to prevent the tail touching the oil.

From the chamber the air passes into the condenser (F) consisting of an ordinary 100 cc pipette, the end of which is seen projecting from the box. The pipette is enclosed in dry ice well insulated with sawdust.

The "insensible perspiration," consisting of all the water vapor from the animal's lungs and skin, accumulates as snow in the pipette. Within one day the apparent size of the snow pile approaches that of the mouse itself. In a series of fifty-one determinations, it was found that 97.9 per cent. of the total water vapor was thus caught in the pipette, the sulfuric acid in G trapping the remainder.

Expired CO_2 is caught in absorbers H and I (shell caustic moistened by three and one drops of water, respectively). Absorber J (H_2SO_4 and pumice) is weighed together with H and I.

The air flow measured by the venturi meter (K) is kept at a constant rate of 200 cc per minute by means of the constant-flow water valve (L).

The specific gravity of the insensibly lost water or (if oil be omitted from the chamber) of the total water lost by the mouse is quickly determined from 0.01 cc of the melted snow by the falling drop method of Barbour and Hamilton.[2] The D_2O percentage of the mixture is calculated from the formula $\frac{G-1}{.1079}$, where G is the specific gravity. The

[2] *Jour. Biol. Chem.*, 49: 625, 1926.

denominator is the fractional part of the specific gravity of pure deuterium oxide (Urey and Teal[3]).

This simple calculation of the D_2O content from a linear specific gravity curve leads to an error in the D_2O volume of not over 0.05 per cent. (Lewis and Luten[4]).

Some idea of the value of the insensibly lost water as an index to the actual D_2O/H_2O ratio prevailing in the living body may be gained by the following comparisons in the two mice, from the carcasses of which about two thirds of the water was regained by distillation:

DEUTERIUM OXID (PER CENT. OF TOTAL WATER)

	Mouse No. 12	Mouse No. 16
Found in insensibly lost water last 12 hours before death	3.8	11.6
Found in carcass (redistilled from acid K_2MnO_4 by courtesy of Dr. Paul K. Smith)	3.6	10.1

HENRY G. BARBOUR
F. J. COCHRAN

YALE UNIVERSITY

[3] *Rev. of Mod. Physics*, 7: 34, 1935.
[4] *Jour. Am. Chem. Soc.*, 55: 5061, 1933.

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