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A New Type of Gas Burette.

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Gas burettes reading directly to 0.01 cc., and by estimation to 0.001 cc., are used in certain kinds of apparatus, for example, that of Haldane. A serious limitation of such burettes is that the fine graduation covers only a small fraction of the total volume. In a 10 cc. Haldane's apparatus, the fine graduation usually extends only from 7 to 10 cc. Analysis of a mixture of gas containing more than 30% of a gas to be determined by absorption cannot be made with the apparatus in the usual manner. Nor can samples less than 7 cc. be taken for analysis.

If the fine graduation is extended to the whole of the burette, even with a capacity of only 10 cc., it would have to be more than a meter long. This is, of course, impractical.

In designing a special apparatus for the study of gas equilibria in blood, we have developed a new type of burette which permits reading of volume from 0.1 to 50 cc. or more directly to 0.01 cc. The length of the burette need not exceed 25 cm. Such a burette can, of course, be incorporated into any apparatus.

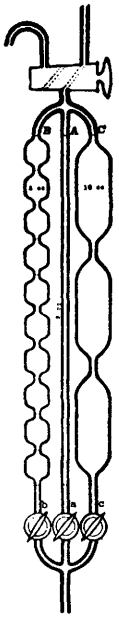

FIG. 1. A new type of gas burette.

The principal feature is the division of the total volume into 2 or more portions. The burette shown in the accompanying figure has a capacity of 50 cc. and is divided into 3 arms. Arm A has a capacity of 2 cc., or preferably a little more, and is graduated to 0.01 cc. Arm B consists of ten 2-cc. bulbs, while Arm C consists of three 10-cc. bulbs. These bulbs are conveniently blown out of a 2 mm. capillary tubing. The 3 arms are joined together above the graduations by a 2-mm. capillary tubing. The volume of this connecting piece need not exceed 0.1 cc. The constrictions in Arms B and C have the same internal diameter as Arm A. The lower ends of the arms, provided with cocks, are joined together and connected to a manometer and a levelling bulb.

For a 10 cc. burette 2 arms will suffice. One arm consists of nine 1-cc. bulbs while the other arm is a 1 cc. burette graduated to 0.01 cc.

With Arms A and B filled with mercury to the zero mark, cocks a and b closed, and c open, the gas to be measured is introduced into the burette. If the volume of the gas, estimated in Arm C is, for example, between 20 and 30 cc., the mercury in C is brought to the 20 cc. mark, cock c is closed and cock b is opened. If the reading in B is between 8 and 10 cc., the mercury is brought to the 8 cc. mark, b is closed and a is opened. The final reading of the volume is taken on arm A. The total volume of the gas measured is, of course, the sum of the volumes in the 3 arms plus that of the connecting piece above the graduations.

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Transmission of Kala-Azar to Hamsters (Cricetulus griseus) by the Oral Route.

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Prior to 1928, probably only 4 flawless successful experimental transmissions of kala-azar *per os* were recorded in literature. Monkeys were employed by Archibald,[1] who used infected human material, and also by Greig and Christophers,[2] who injected by means of a hypodermic syringe human material obtained by splenic puncture and cultures of *Leishmania donovani* into the jejunum. Tran-

[1] Archibald, A. C., *J. R. A. M. C.*, 1914, **23**, 479.

[2] Greig, E. D. W., and Christophers, S. R., *Ind. J. Med. Res.*, 1916, **18**, 151.