THE MICROBURETTE.

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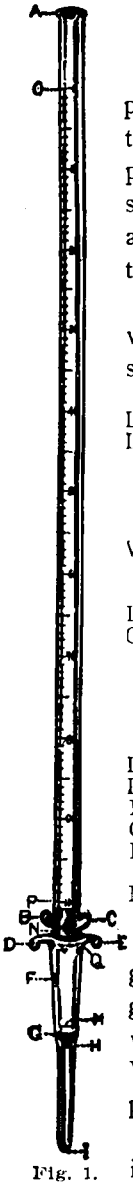

Fig. 1.

The toxicologist in making titrations upon minute quantities of poisons recovered from cadavers, and the clinician in titering small portions of materials like blood, etc., taken from patients, are often compelled to work upon samples so small that ordinary burettes will not serve the purpose. The microburette, herein described, was designed and is used by me for the above purposes and for microchemical titrations in general.

Reference to Fig. 1 will show the general character of the apparatus, while Fig. 2 shows a detail of the peculiar cock employed. The dimensions and specifications are as follows:

Length over all	AI,	325	mm.
Length of graduated portion	OP,	225	"
" " portion	DEI,	65	"
" " socket	DEH,	28	"
" " taper	JM,	20	"
" " plane face	KL,	16	"
Width of plane face	KL,	3	"
" at lugs	DF,	26	"
" at lugs	BC,	16	"
Inside diameter at	O,	2.3	"
Outside " "	O,	7	"
" " "	Q,	9	"
" " "	G,	7	"
" " "	H,	5	"
" " "	J,	6.5	"
" " "	M,	5	"
Diameter of outlet at	F,	1	"
Distance between graduation units (.01 cc.) about		2.3	"

Made entirely of glass.
Glass in graduated portion has white background.
Black register mark at N to show position of longitudinal central line of plane face, KL.
Made in two portions, AM and DEI.

The two portions are first fitted together by an accurately smooth-ground, tapered joint as shown in drawing, after which a plane face is ground off at KL. While grinding this face, test frequently the flow of water from AM, out of M, past the face KL and out of orifice F. When the rate of flow is about .01 cc. per second, cease grinding and polish face KL.

The apparatus is tubular with the exception of the portion HI, which is a glass rod.

Glass must be perfectly smooth throughout, showing no irregularities like sand marks, blowholes or grinding marks.

Total volume graduated 1 cc., divided into 100 parts.

HOW TO USE THE MICROBURETTE.

The liquid to be titred, usually one cubic centimeter or less in volume, is contained in a small glass evaporating dish, in a watch glass or in a small porcelain crucible—accordingly as best suits the end point tint in the particular analysis in

hand. The microburette having been thoroughly cleansed in the usual way, is next thoroughly cleansed with alcohol, ether, alcohol and water to remove any grease—special attention being paid in this respect to the portion DEI. The two parts are now joined and are held together by a small rubber band which engages the lugs, B, C, D and E, and maintains a moderate tension upon the two parts. No burette stand or clamp is employed. The microburette is held in the hand. HI is used as the stirring rod while titering. A finger, by pressure against lug D or lug E, rotates DEI and in this manner starts or stops the flow of standard solution. When F is not in apposition with KL there is no flow. The flow is established when F and KL are in apposition, which is known by looking at F and at the register mark N. The flow is from M, past KL, out of F and down the outside of the stirrer HI. This flow is satisfactory only when the stirrer has been properly cleansed as described above. In filling the apparatus prior to a titration, use a minute funnel at A. Fill nearly to A and then establish the flow until the level sinks to zero. The stirrer is now coated with a very thin film of standard solution and the titration should be begun at once.

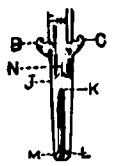

Fig. 2.

While the microburette will commend itself for its convenience and elegance in use, its main advantage arises from the fact that its flow is partly controlled by capillary action on the outer surface of the portion FI. This feature enables one to deliver small fractions of a drop from the microburette with as much ease as whole drops can be delivered from the ordinary burette. The readings are to 1/200 cc.

In calibrating the microburette and in running test titrations, the assay balance should be employed.

THE ASSAY PROCESSES OF THE U. S. P.

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On various occasions we have pointed out that several assay processes of the present U. S. P. are very much in need of being thoroughly revised, both because the methods are rather cumbersome, and the results are far from giving the true percentage of the active principle. Since the methods are to be thoroughly discussed at this meeting we thought it necessary to again give our views in regard to the processes, although several points given here may have been discussed by us on previous occasions.

We still believe that the aliquot part method, when worked with precaution, gives more accurate results than the percolation method. The drug is more thoroughly exhausted by shaking with the menstruum than by percolating. A percolator perhaps is our most unscientific piece of apparatus. A channel might be formed in the packed drug, the parts adjoining this channel may be exhausted, while other parts of the drug come in contact with the menstruum only superficially. The method, besides, is very tedious, especially when such a fine powder