and in its oxidation of that substance yields smaller amounts of ammonia and hydronitric acid than the chlorate.

The reasons for not subjecting the iodides of hydrazine to the same study are now apparent; both iodine[1] and iodate,[2] under all conditions tested, are oxidizing agents of the third class and therefore can be expected to yield no interesting products.

Summary.

1. The electrochemical oxidation of hydrazine carbonate, under conditions which favor the formation of percarbonates, results in the quantitative oxidation of the hydrazine.

2. That of hydrazine hydrochloride and hydrobromide yields only nitrogen and water or, in addition to these, also ammonia, depending on the conditions of the electrolysis.

3. The reactivity of hypochlorites with hydrazine appears to preclude the possibility of the formation in the presence of hydrazine in large amounts of the more highly oxidized oxy-chlorine ions.

WESLEYAN UNIVERSITY, MIDDLETOWN, CONN.

NOTES.

A Jointless Stock-Bottle-Support Buret.—It is believed that with the apparatus herein described and figured, titration will be made easier, more economical of solutions, and (especially with caustic alkalies) more accurate, than with other apparatus, for the reasons that (1) exposure to the air and (2) the difficulties of transferring the solution back and forth between container and buret are reduced to a minimum.

Since the first draft of this article was made, the apparatus of Burkhardt[3] has appeared, which, however, though similar in principle, is believed to be not so good as the one herein described; because of (1) the *joint* wet by the solution, (2) the closed-in top to the buret, (3) the metal brace below, and (4) the arrangement of the opening above, which would seem to make it difficult to empty the buret back into the container.

As the diagram shows, our apparatus consists essentially of a *container-limb* (made experimentally from a tall open-mouthed cylinder), joined above by a short, wide, unobstructed, nearly horizontal tube, to a *buret-limb* (made experimentally from a 50 cc. buret shortened to a net (measuring) capacity of 15 or 20 cc.).

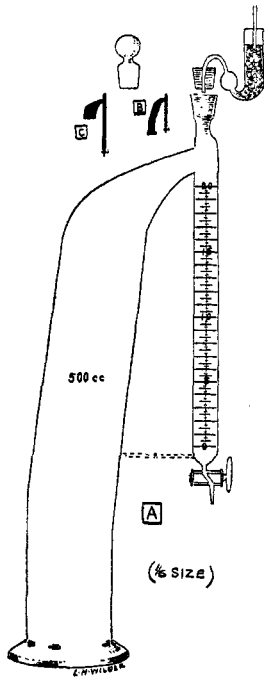
In transferring the solution from container to buret, or *vice versa*, the apparatus is tipped to an almost horizontal position, with the limb from which the liquid is to flow, uppermost. To facilitate this transfer, the

[1] Browne and Shetterly, THIS JOURNAL, 30, 53 (1908).

[2] Rimini, *Loc. cit.*

[3] *Chem. Ztg.*, 35, 656; *C. A.*, 5, 20, 3359.

two limbs must be inclined at a slight angle to one another, diverging from above downward; and, as the buret must be vertical while in use, the container is made to assume a slight slant by an almost imperceptible bend a short distance above the base.



In the most generally useful form of the apparatus (A), the tip of the buret is 3–6 inches above the supporting surface. This necessitates a tall container and a short buret. If it is desired to have the buret of full or extra length without extreme elongation of the container, the apparatus may be proportioned as shown in the small silhouettes (B) or (C) in the figure. In these forms the apparatus must be supported on a block or shelf during the titrations.

It adds to the strength of the apparatus at its weakest point, though it is not absolutely necessary, to seal in a glass-rod brace as indicated by the dotted lines in the figure. The upper opening should be slightly flared and glass-stoppered, similarly to a volumetric flask. A rubber stopper with a small soda-lime tube should also be provided. The constriction just below the opening is to reduce the chance of spilling while the liquid is being transferred from one tube to the other.

The apparatus may be of almost any dimensions; a very handy size for ordinary desk work is: Height, 45 cm.; diameter of base, 10 cm.; container-limb, 500 cc.; buret-limb, 20 cc. net, tip 13 cm. above supporting surface. We have also in use (as part of a very compact portable CO_2-in-air apparatus) a unit (form B) of the following dimensions: Height, 26 cm.; container-limb, 150 cc.; buret-limb, 10 cc. net.

The obvious advantages of this form of titration apparatus may be summarized as follows: Compact, self-contained and (form A) self-supporting. Members short and stout. No rubber, metal, or other perishable substance—all glass. No joints, except the single simple stopcock of the buret. No air-pressure or suction; the bodies of liquid in the two limbs separated, or easily transferred in either direction, by gravity; hence no need for running the solution remaining in the buret to waste, and no excuse for allowing the buret to stand idle with solution in it. After the original filling of the container, there is no further exposure of any part of the solution to outside air except as each measured portion leaves the tip of the buret.

By reason of these advantages, this apparatus is believed to be particu-

larly useful for alkalies, especially if provided with an obliquely-bored or otherwise alkali-resistant stopcock.

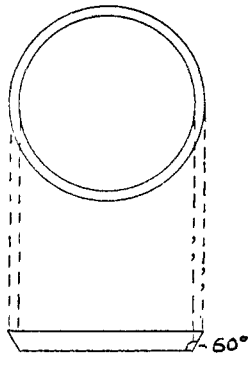
This apparatus may be had, of any specified dimensions, from Eimer & Amend.

NORMAN ROBERTS.

HYGIENIC LABORATORY, WASHINGTON, D. C.

Filtration with Alundum Plates.—Filtration of large volumes of liquids containing very fine precipitates, by means of asbestos fiber and the Witte plate, has been found very inconvenient at times.

Fig. 1.



As substitutes for filter plates and asbestos, disks made of "alundum" (fused aluminium oxide) have shown great efficiency. These filter disks were made by the Norton Co., of Worcester, Mass., according to the design, as shown in the accompanying sketch.

An ordinary flat rubber band stretched around the filter disk or plate makes it fit snugly to the funnel, when suction is applied by means of the filter pump. These plates may be had in several grades with pores of different sizes, those with the smallest pores retaining the finest precipitates perfectly. Their use saves the trouble of preparing asbestos and also makes it possible to stir the precipitates without danger of dislodging the filtering material as when asbestos is used.

RAYMOND C. BENNER,
WILLIAM H. ROSS.

UNIVERSITY OF ARIZONA, TUCSON.

THE RELATION BETWEEN THE CONFIGURATION AND ROTATION OF THE LACTONES IN THE SUGAR AND SACCHARINIC ACID GROUPS.

BY ERNEST ANDERSON.

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Hudson[1] has pointed out a very simple relation between the configuration and rotation of the lactones of mono-basic sugar acids, namely, lactones of dextro rotation have the ring on one side of the structure, lactones of levo rotation have it on the other. This relation is true not only for the lactones described by Hudson but for practically all monobasic and some dibasic acid lactones in the sugar and saccharinic acid groups. In the following table are collected the configurations and specific rotations of eighteen such lactones.

[1] THIS JOURNAL, 32, 338.