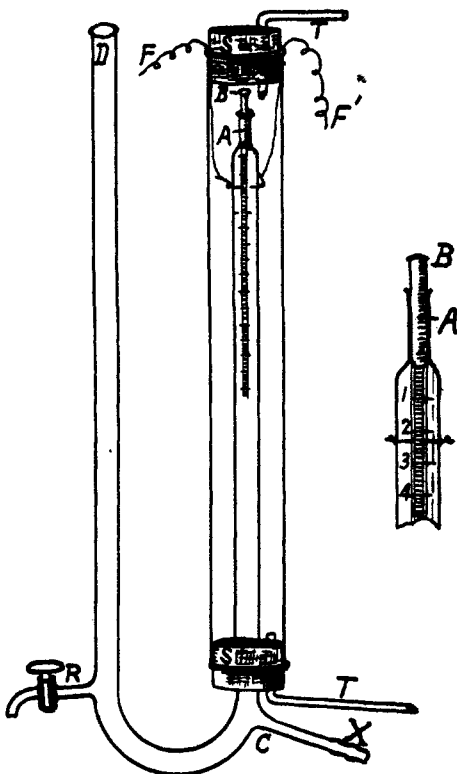


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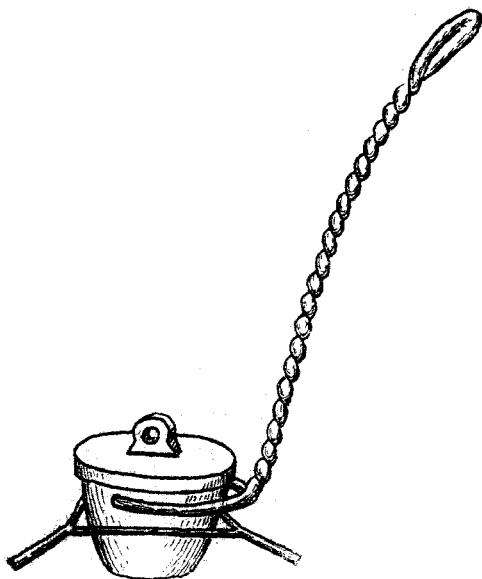
An Improvement of Hoffman's Eudiometer.—The stopcock of the Hoffman eudiometer, which is used to demonstrate the volumetric composition of water, is liable to break when it is heated with steam. We have found that it is an advantage to replace this stopcock with a ground glass stopper, A (see fig.), which is of conical shape, having the larger part below and provided with a glass flange, B, which prevents the stopcock, when it is loosened, from falling through the top of the buret. In order to fill the eudiometer the stopper is pushed down, leaving the flange resting on the top of the tube. The electrolytic gas is then allowed to enter through the side tube X. As it rises it drives the air completely from the walls between the mercury and the glass. After a short time the eudiometer is closed by pulling the stopper up. The stopper should be lubricated slightly with lanoline or some other suitable lubricant. The outer tube is then adjusted and the whole heated in the current of steam and the remainder of the operation carried out as usual. In addition to the fact that the stopcock is less liable to break than the usual stopcock, it occupies less space in the larger tube through which the steam passes.



GAETANO MAGNANINI AND A. VENTURI.

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A Crucible "Fork."—This little device has been in use in the laboratories of William Jewell College for some time and has proved very practical and convenient. It was designed for the use of students in elementary classes but may appeal to chemists in general. The fork is made of stout aluminum wire. The prongs of the fork enclose slightly more than a semicircle and should be bent to fit the crucible used. The space be-



tween the ends of the prongs should be large enough to pass around the crucible when supported on a tripod, but small enough to prevent the crucible from slipping out when the fork is lifted. When properly adjusted the crucible is held very securely.

H. C. PARKER.

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An Inexpensive Dialyser for Class Use.—The glass dialysing frames are too expensive for use by classes in colloids. Even the goldbeater's skin to be stretched

over these frames is not cheap. Such expense is a handicap on colloid research and discouraging.

If a very wide-mouthed bottle is at hand the bottom may be cracked off by a hot wire on a file mark, a membrane tied over the lip on the mouth of the bottle and a good dialyser of trifling cost is ready. This type is not new, of course, but deserves to be better known. If a large number of rather small dialysers are needed, test tubes may be adapted by cutting off the bottom in the same way or heating and blowing out the ends. The lip on the test tube permits secure attachment of the membrane with a rubber band.

The cheapest and most easily made dialyser I have used is a sheet of parchment paper shaped like a beaker. In other words it is all membrane having much greater dialysing surface than the usual forms. These beakers or cups can be shaped easily by any student. A sheet of parchment free from pinholes is soaked in water a few minutes to soften it and then folded over a bottle of the desired size and shape. The folds should be triangular, narrow and cover each other much as do the folds of an umbrella. It is best to crease them with firm pressure. A cord is tied around the paper and bottle about one centimeter from the upper edge and the whole set aside to dry. When dry the bottle is removed and the cup holds its shape perfectly. The cord must be left on the cup to support the sides. Two holes may be punched near the top of the paper and a string attached like the handle of a pail. So tough is the paper that a parchment cup holding a liter of water may be carried without tearing or

collapsing. Trimming the upper edges of the cup gives a neater appearance.

To use such a dialyser it is nearly filled with the colloidal solution and suspended in a large vessel of pure water. Removal of ions is extremely rapid in spite of the fact that parchment is inferior as a membrane to goldbeater's skin. It is evident that with a given membrane the rate of dialysis is proportional to the effective surface of the membrane. In this form the bottom and sides of the cup are all effective.

The rate of dialysis may be doubled if two such cups are used, the smaller inside the larger. The inner cup holds pure water and the other the colloidal solution, while the combination of cups is hung in a larger vessel of pure water. This arrangement gives dialysing surface outside and inside the colloidal solution. The water may be changed as desired. It is quite possible that this simple method of making parchment cups may have been used by others but I have found no reference to it in the literature.

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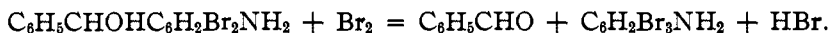
[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF HARVARD UNIVERSITY.]

SOME REACTIONS RESULTING IN THE CLEAVAGE OF POLYNUCLEAR AROMATIC COMPOUNDS.

By E. P. KOHLER AND R. H. PATCH.

Received March 20, 1916.

In 1911 Clarke and Esselen¹ found that when bromine reacts with *p*-aminobenzhydrol the principal result is not a brominated hydrol but a mixture of two mononuclear compounds: benzaldehyde and a substitution product of aniline. They then studied the action of bromine on a number of derivatives of *o*- and *p*-aminobenzhydrol and found that all of these behaved in a similar manner. A typical reaction is represented by the equation



All of the experiments of Clarke and Esselen were made with derivatives of diphenylcarbinol, but Clarke and Patch² subsequently extended the investigation to derivatives of triphenyl carbinol, and to amino alcohols that have aliphatic as well as aromatic groups. The results reported in this paper were obtained in continuation of that investigation.

That halogens occasionally replace an aliphatic side chain in aromatic compounds, or split diphenylmethane derivatives into mononuclear compounds has long been known. As early as 1845 Piria³ found that

¹ THIS JOURNAL, 35, 1135 (1913); 36, 308 (1914).

² *Ibid.*, 34, 912 (1912).

³ *Ann.*, 56, 47 (1845).