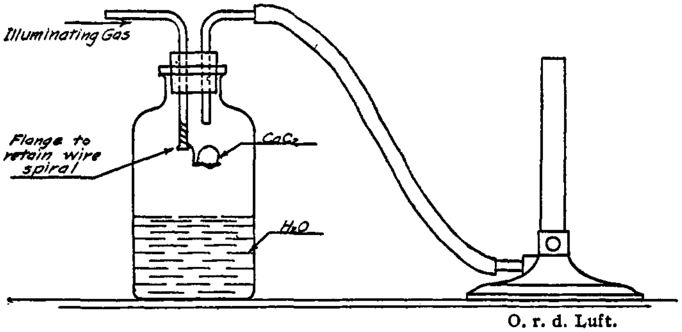
DATA FOR CURVE XII.

"Control Reaction."		0.0243 *N* Sucrose.	
Time in min.	Conc. of Na_2SO_3 in millimols per liter.	Time in min.	Conc. of Na_2SO_3 in millimols per liter.
23.75	71.7	16.25	97.0
30.5	66.3	38.5	83.2
50.25	50.6	57.5	71.4
68.0	37.4	79.0	59.2
89.0	26.9	100.75	45.3
111.5	11.6	122.0	38.1
135.0	3.6	143.25	29.9
		154.0	25.5
		163.25	21.8

MADISON, WISCONSIN.

NOTES.

Laboratory Experiment—The Enrichment of Illuminating Gas.—A trap, consisting of a wide-mouth bottle, is introduced between the gas outlet and an ordinary Bunsen burner. A copper wire is wrapped around one of the tubes which project through the stopper and serves to support a piece of calcium carbide.



While the carbide is in position the gas is lighted and the air vents of the burner adjusted so the flame is barely non-luminous. The carbide is then shaken off into the water where acetylene is produced. The flame becomes quite luminous and remains so for a convenient length of time.

The apparatus may be easily and quickly cleaned for a repetition of the experiment. ROSS ALLEN BAKER.

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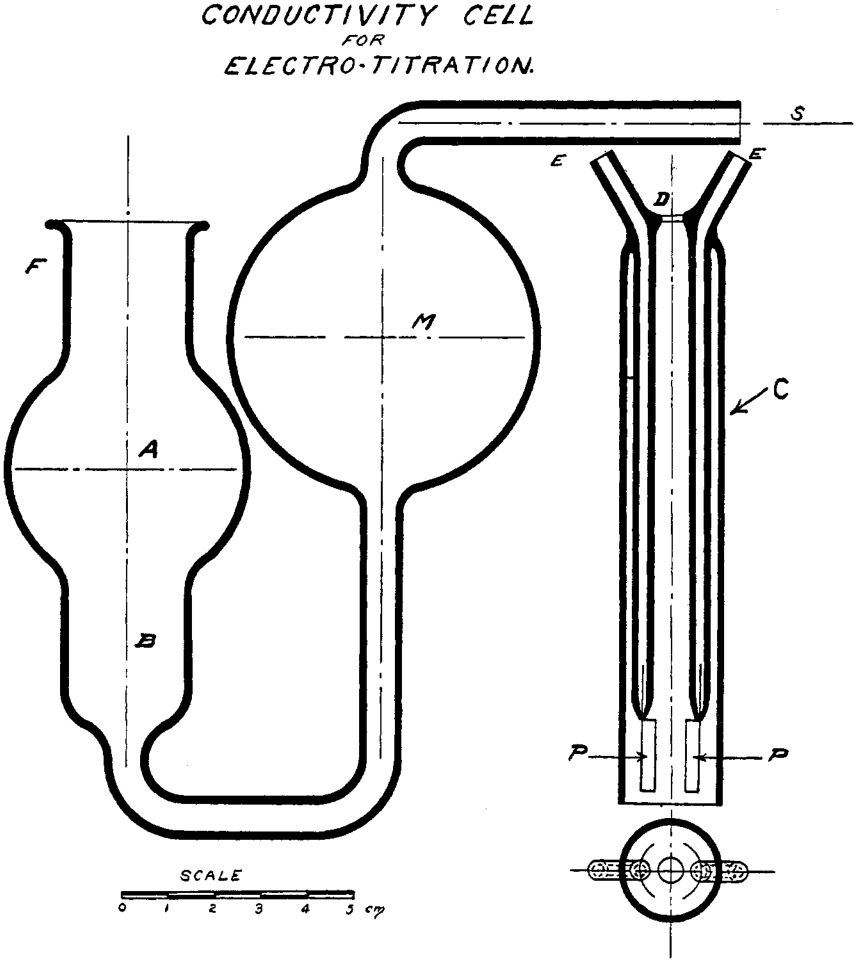
A New Form of Conductivity Cell for Electro-titration.—The increasingly frequent use of the electro-titrametric process for determining the end points of reactions makes a special apparatus for this operation desirable.

In the forms commonly used it is not easy to thoroughly mix the contents, and upon cleaning the apparatus the electrodes are frequently damaged. A new form of apparatus is described which possesses protected electrodes and provides a simple means of adequately mixing the electrolyte, and in addition it is of rigid construction and permits unobstructed access to the electrolyte with a buret.



The apparatus is shown in the accompanying sketch and consists of an electrode holder, C, similar to an inverted test tube, containing the electrodes securely sealed in position; an opening at the top, D, to permit the introduction of a buret; the cell jar B expanded in the middle A into spherical form; a bulb, M, with a capacity approximately equal to the whole of the cell jar B and A.

The use is obvious. After the addition of substance from a buret the mixing is performed by sucking on a soda-lime tube attached to the outlet S. This causes the electrolyte to rise into the bulb M. The liquid is then allowed to run back into the cell jar B. Two or three repetitions are sufficient for thorough mixing.

The lower part of the cell jar B is designed to allow the use of small amounts of solution, while with larger amounts the liquid can rise into the spherical shaped part of the cell jar without touching the upper neck F, contact with which may give capillary troubles.

The apparatus has given good service in the laboratories of Physics and of Chemistry[1] in this institution and is superior in several respects to one previously described.[2] HAROLD E. ROBBINS.

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[CONTRIBUTION FROM CHEMISTRY OF FOREST PRODUCTS, UNIVERSITY OF WISCONSIN.]

ON THE QUINONE-PHENOLATE THEORY OF INDICATORS: THE ELECTRICAL CONDUCTIVITY OF SOLUTIONS OF PHENOLSULFONPHTHALEIN AND OF ITS BROMO AND NITRO DERIVATIVES.

BY E. C. WHITE AND S. F. ACREE.

Received December 18, 1916.

In the preceding papers[3] by us the assumption has been made that the sulfonphthaleins investigated exist largely, if not entirely, in the quinoid modification when in aqueous solution.

$$(C_6H_4SO_3)C(C_6H_4OH)_2 \text{ — } (HOC_6H_4)(O : C_6H_4 :)CC_6H_4SO_3H.$$

Colorless lactoid. Colored quinoid.

This assumption was based upon the colors of the solutions of these substances, and of their salts.[4] If this assumption is well founded, the solu-

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[1] *Am. J. Sci.*, [4] **41**, 244 (1916).

[2] *Ibid.*, [4] **41**, 249 (1916).

[3] Acree and Slagle, *Am. Chem. J.*, **39**, 528, 789 (1906); **42**, 115 (1909); White and Acree, Address at New Orleans meeting of American Chemical Society, *Science*, **42**, 101, and unpublished dissertation 1915, University of Wisconsin; Lubs and Acree, THIS JOURNAL, **38**, 2772 (1916).

[4] Through absence and consequent failure to see the page proof of the article by Lubs and Acree, the third reference on page 2778 and the first on page 2779 were interchanged. Through this mistake Dr. White was deprived of the credit due him for the experimental work in the table given, which was first reported at New Orleans. The theory of these titrations, of the change in affinity constant produced by substituent groups, and of the colors of the salts, was fully discussed in Dr. White's dissertation. The developments by Lubs and Acree, and by Lubs and Clark in friendly cooperation with us, were of course subsequent to Dr. White's work, and his unpublished work was placed at the disposal of Lubs and Clark. The article by Lubs and Acree was intended primarily as a contribution on the *quantitative* influence of substituent groups on the P_H values and affinity constants, and not as an exposition of the applica-