0.2010 g. Cu taken and 0 to 0.2 g. Sn, 0 to 0.2 g. Sb, 0 to 0.2 g. WO_3, 0 to 0.22 g. MoO_3, 0 to 0.5 g. KH_2AsO_4.

Current, ampere.....	0.25	0.2	0.1	0.1	0.1	0.05	0.1	0.1
E. M. F., volts.....	2.4	2.4	1.4	1.4	1.4	1.3	1.7	1.7
Gram Cu found.....	0.2013	0.2012	0.2015	0.2009	0.2011	0.2011	0.2011	0.2010

The first two results given have the copper value corrected for platinum present. In the last six determinations no correction is made, for although in some cases a faint qualitative reaction for platinum was obtained, in no case was there a weighable amount deposited with the copper.

As an example of the immediate practical application of the HF method for separating copper from W, Mo, etc., we offer the following determinations of the copper in an alloy (No. 117) prepared by S. W. Parr.[1] Mr. S. F. Cox was kind enough to furnish us with a sample of the alloy. According to the analysis of Rowland and Braley, the alloy contains 6.42% Cu.

We find: 6.37; 6.59; 6.44; average, 6.46.

A number of interesting theoretical matters have come up in connection with the use of hydrofluoric acid in electrochemical analysis. Some of these are being investigated.

PRINCETON, N. J.

NOTE.

Note on a Convenient Dip Electrode.—In the determination of the conductivity value[2] and of the volumetric lead number[3] of maple syrups, conductivity cells with very rigid electrodes are required, so that the distance between the electrodes may not be altered in stirring the somewhat viscous diluted syrup. The cell recommended by Snell[4] is unsuitable for the volumetric lead determination, inasmuch as the precipitate settles upon the horizontal electrodes. Its unprotected electrodes are also subject to accidental displacement.

The small dip electrode[5] used in beginning the work on the determination of the volumetric lead number of maple syrup, also proved to be unsatisfactory, since the electrodes were much too small and were also subject to displacement when the diluted syrups were stirred.

The writer overcame these disadvantages by designing the electrode shown in the illustration. It consists of a hard glass cylinder 6.5 cm. high by 3.7 cm. in diameter open at both ends. One end is fitted with a vulcanite cap, B, and is fastened to the cylinder by means of set screws.

[1] "An Acid-Resisting Alloy to Replace Platinum in the Construction of a Bomb Calorimeter," THIS JOURNAL, **37**, 2515 (1915).

[2] Snell, *J. Ind. Eng. Chem.*, **5**, 740 (1913).

[3] Snell, MacFarlane and Van Zoeren, *Ibid.*, **8**, 241 (1916).

[4] *Loc. cit.*

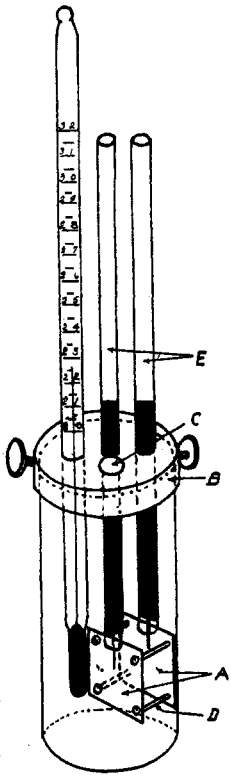
[5] Snell, *J. Ind. Eng. Chem.*, 8, 144 (1916).

A thermometer and two glass tubes pass through the cap. The hole C allows the air to escape when the electrode is immersed into a solution. The platinum connecting wires, which are welded to the electrodes, are protected by being sealed in the tubes E, in which mercury is placed to connect the electrodes with the bridge leads.

The electrodes A are of No. 30 B & S gauge platinum foil 2 x 2 cm. squares set one cm. apart. They are firmly fastened together by means of four glass pins as shown (D). The pins have small enlargements two millimeters from each end, which serve as collars and prevent the electrodes from being crowded together. The ends of the pins pass through the electrodes and are clinched. In this way they are firmly held in place.

An ordinary 100 cc. hard glass beaker may be used to complete the cell.

The electrode has proven so convenient and trustworthy, that the writer desires to bring it to the notice of his fellow chemists and others who may perhaps find use for it, since it can well be adopted in other lines of work on conductivity. It can easily be constructed by any one having a little skill in making apparatus.



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CORRECTION.

In the February JOURNAL, page 361, line 25 should read "$y = 10 \div$ no. of centimeters," instead of "$y = 1 \div$ no. of centimeters."

[CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE.]

THE REARRANGEMENT OF ISO INTO TERTIARY BUTYL BROMIDE.

BY A. MICHAEL, E. SCHARF AND K. VOIGT.

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The structural rearrangement of an alkyl halide was first proven by Eltekow,[1] who found that isobutyl and isoamyl bromides are partially converted, by heating in a sealed tube to 230°, into the corresponding tertiary derivatives. Eltekow, and also Aronstein,[2] who later demon-

[1] *Ber.*, **6**, 1258 (1873); **8**, 1244 (1875).

[2] *Rec. trav. chim.*, **1**, 1346 (1882).