(Mg, Ca, Sr, Ba) and the HM (Cu, Zn, Pb) ions. The results are in good agreement with that of Rogozhina, who determined aluminium at pH 10.5 by back titrating excess EDTA with $ZnSO_4$ using chromogen dark blue.

Khalifa and Ismail [2] found that in the analysis of aluminium mixtures, the presence of any stable metal-EDTA complex favours the accuracy of the determination of aluminium and prevents fading of the potential at the end point.

Results of analyses of Ti mixtures (in about the same amounts as in the case of Al) were also in most cases fairly accurate indicating the reliability of the adopted procedure for such an analysis.

The potential breaks are sharp enough to permit accurately the determination of the end points within 0.02 ml of 0.05 or 0.01 M titrant. The breaks lying in the immediate vicinity of the three end points mentioned above are of good order of magnitude amounting in average to 70, 130 and 170 mV/0.1 ml of 0.05 M Hg(II) with Al mixtures and 60, 120 and 100 mV/0.1 ml of 0.05 M titrant with titanium mixtures.

The analysis of the above mentioned mixtures was also performed using a platinum electrode instead of the silver amalgam electrode. The potential breaks detecting the end points are of lower magnitude than those obtained with the silver amalgam electrode ranging from 40 to 144 mV/0.1 ml titrant, which are still sharp enough to permit requisite accuracy.

The importance of the present work stems from the fact that components of the analysed mixtures are constituents of many useful alloys.

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Indirect Potentiometric Determination of Bismuth and Orthophosphate

Indirekte potentiometrische Bestimmung von Wismut und Orthophosphat

Best. von Wismut und Phosphat; Potentiometrische Titration; ÄDTA/Hg

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A procedure has been worked out for the determination of bismuth and orthophosphate employing the back-titration of unconsumed EDTA with mercury(II) in hexamine buffered medium, using silver amalgam as indicator electrode coupled with saturated calomel electrode. The potentiometric end-point determination ensures higher accuracy than visual methods. With 0.1 to 104 mg of Bi the percentage error was $0.3^0/_0$ at most, in the case of 0.5 to 50 mg of phosphate it was $0.3^0/_0$ also.

Determination of Bismuth. To 2 ml of sample solution add 4 ml of 0.1 M EDTA solution, 8 ml of $10^0/_0$ hexamine solution and enough 0.4 M HNO_3 or 0.5 M NaOH to adjust the pH to 8—9. Make with water up to 25 ml and titrate unconsumed EDTA with 0.1 M Hg(II) nitrate solution using silver amalgam as indicator electrode.

Determination of Phosphate. To 1—5 ml of boiling sample solution (0.1 M in HNO_3), add an excess of standard 0.1 M Bi solution (3—8 ml) with constant stirring, heat for 10 to 15 min on a water bath to not less than 10 ml, filter from Bi phosphate, wash the precipitate with 5 ml portions of hot 0.4 M HNO_3, combine with the filtrate, add 5—10 ml of EDTA solution, 8 ml of hexamine solution, adjust to pH 8—9 and back-titrate unconsumed EDTA with standard Hg(II) solution as above. Calculate Bi equivalent to phosphate.

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